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Statewide Scale-up of Group Prenatal Care in South Carolina

by

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ii

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ABSTRACT

Background: Poor birth outcomes and racial disparities in birth outcomes in South Carolina are widely recognized problems. To improve maternal and child health outcomes, especially among vulnerable groups, universal access to timely, appropriate, and effective care should remain a priority through increased availability and accessibility. An interagency collaborative in South Carolina expanded CenteringPregnancy (CP) from two to five medical practices throughout the state. CenteringPregnancy is associated with improved birth outcomes and reduced rates of racial disparities in preterm birth throughout the United States. Important questions in the literature remain about strategies and determinants of scaling up sexual and reproductive health interventions and how scale up is managed over time. **Methods:** The aims of this mixed-methods process evaluation were to: 1) identify and describe the multi-level contextual elements that influence statewide scale-up of a health model; 2) identify the degree of completeness and fidelity that sites achieved during GPNC implementation; and 3) identify the system-level essential (core) strategies, settings, policies, and structures that facilitate or challenge formal scale-up of GPNC to the state level. The process evaluation involved the following data collection procedures: twenty-nine individual and group interviews with key stakeholders; three site observations of six to nine group prenatal care sessions with women; two surveys of group facilitators across sites; review of policies, meeting notes, and conference proceedings; and a media analysis of national and local CP coverage in newspapers, blogs, news websites, and

press releases published from January 2013 – November 2014. Data analysis of qualitative data involved ongoing and inductive systematic coding and quantitative data involved calculating average scores. **Results:** Windows of opportunity emerged and were created at state and site levels throughout the scale-up process. Key decisions and actions at state and local levels occurred in ways that were consistent with stakeholder values. At the state level, strategic use of research demonstrating that CP improved birth outcomes as well as reduced racial disparities in outcomes, leveraged financial and political commitment to expanding statewide access to group prenatal care, especially among women enrolled in Medicaid. All five sites had high levels of fidelity, dose delivered, and dose received. Reach was low. **Discussion:** This was the first evaluation of how CP can be implemented within existing healthcare systems, and how to successfully move CP to scale. Motives, decisions, and actions of stakeholders were reflections of their values. Creation and use of opportunity windows that allowed stakeholders to pursue actions consistent with values was important to the early phases of intervention implementation and scale-up. Advancing these processes across complex health systems required strong political advocacy and support, interdisciplinary collaborations, and funding. Despite contextual challenges, successful GPNC implementation occurred at these five sites through state-level support and training, strong organizational advocacy, and site-level leadership and staff capacity. Successful CP expansion within existing complex health systems was possible when political will, financial support, and community engagement were created and utilized. Findings of this study lay the groundwork for future decision-makers who are interested in expanding a new model of healthcare into diverse health systems to the state level in the US.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1: INTRODUCTION

There are many evidence-based solutions for health problems, including advances in healthcare delivery, but the slow adoption of these innovations has led, in part, to missed opportunities in addressing some of the most burdensome health problems (Glasgow et al., 2012; Hartmann & Linn, 2008; McCannon, Berwick, & Massoud, 2007; United Nations, 2013a, 2013b; United States Department of Health and Human Services, 2010; World Health Organization, 2010). Maternal and child health problems in the United States have been especially challenging to address. At the time the *Final Review* on US Healthy People 2010 was published, thirty-nine of the forty-two Maternal, Child, and Infant objectives had not been met. These included reduction in infant deaths from 7.2 to 4.5 per 1,000 live births, maternal deaths from 9.9 to 4.3 per 100,000 live births, increase in first trimester prenatal care from 83% to 90%, and improved rates of adequate prenatal care from 74% to 90%. Moreover, between 1998 and 2007 the rates of low birth weight significantly increased (7.6% to 8.2%), as did preterm births (11.6% to 12.7%) (National Center for Health Statistics, 2012). Despite the goal of reducing racial and ethnic health disparities in maternal, child, and health outcomes, however, disparities remained in thirty-three objectives and actually increased in many of the objectives for non-Hispanic Black women (National Center for Health Statistics, 2012).

1

In South Carolina, poor birth outcomes and racial disparities in birth outcomes are widely recognized problems (South Carolina Department of Health and Human Services, 2013). In 2011, the state had the 7th highest infant mortality rate in the nation at 7.4 per 1,000 live births, higher than the national rate of 6.07 per 1,000 live births. Racial disparities in infant mortality between Black and White infants has been cause for concern, as mortality in 2011 was 11.67 per 1,000 live births for Black infants and 5.36 per 1,000 live births for White infants (United States Centers for Disease Control and Prevention, 2015).

Despite mixed results from four randomized control trials (Andersson, Christensson, & Hildingsson, 2013; Ickovics et al., 2007; Jafari, Eftekhar, Fotouhi, Mohammad, & Hantoushzadeh, 2010; Kennedy et al., 2011), there is growing evidence that group prenatal care (GPNC), specifically the CenteringPregnancy (CP) model, is associated with improved birth outcomes and reduced rates of racial disparities in preterm birth throughout the US (Grady & Bloom, 2004; Ickovics et al., 2007; Ickovics et al., 2003) and in South Carolina (Picklesimer, Billings, Hale, Blackhurst, & Covington-Kolb, 2012). has also been associated with higher initiation of breastfeeding (Tanner-Smith, Steinka-Fry, & Lipsey, 2013), better knowledge about pregnancy (K. A. Baldwin, 2006), patient satisfaction (Ickovics et al., 2007), post-partum family planning (Hale, Picklesimer, Billings, & Covington-Kolb, 2014), and psychosocial outcomes (Heberlein et al., 2015). CenteringPregnancy differs from traditional prenatal care in that care and education are provided in a group setting rather than individually. There are three key components to CP: healthcare checkups by a licensed healthcare provider along with

patient self-care activities, facilitative (not didactic) group discussions, and a supportive environment through group interaction (Centering Healthcare Institute, 2009c). Additional details of GPNC and the CP model are described in Chapter 2: Background and Significance.

While the term *scaling up* has multiple meanings depending on the discipline, project, and context, the World Health Organization (2007) definition was adopted by the process evaluation team for this project: "efforts to increase the impact of innovations successfully tested in pilot or experimental projects so as to benefit more people and to foster policy and programme development on a lasting basis" (p. i). Maternal and child health problems can be addressed by scaling up evidence-based health interventions (McCannon et al., 2007; United Nations, 2013a). To bring an intervention to scale involves increasing the intervention's reach over time so more people benefit from it and the process results in changes in policies (World Health Organization, 2007). Intervention scale-up is challenging because of numerous internal system-level and external contexts that must be navigated (de Savigny & Adam, 2009; Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). For example, the structure and nature of a system changes as a result of interactions between agents within the system, as well as with agents in other systems (de Savigny & Adam, 2009). Structural and organizational characteristics, such as attitudes and beliefs of agents within the system, capacity, skills, and procedures of the system, are examples of system-level context. External contextual elements influence intervention implementation and scale-up through funding, political climate, and commitment (Fixsen et al., 2005). These characteristics and contexts will be discussed in Chapter 2: Background and Significance.

A significant aspect to scaling up health interventions is systematic research and evaluation of processes and outcomes to understand the determinants involved in interventions that have been moved to scale (King, Morris, & Fitz-Gibbon, 1987). To develop a deep understanding of how and why pathways are related to outcomes, qualitative and humanistic aspects to the scale-up process should be examined. This helps to define which features of the intervention should maintained, while others can be adapted to meet local contextual needs. Rich insights in these processes are useful as plans are made to move an intervention from the initial site to different conditions (King et al., 1987; Simmons, Fajans, & Ghiron, 2007). Process evaluation of scaling up interventions can provide essential details that are used to fill gaps in literature regarding how effective health interventions are moved to scale within real-world contexts across health systems (Glasgow et al., 2012).

1.1 Context and Setting

The South Carolina Department of Health and Human Services (SC DHHS), Greenville Health System, and South Carolina March of Dimes have collaborated in an attempt to address poor birth outcomes at a state level by expanding a group model of prenatal care, CP. Between 2013 and 2015 there was a three-year collaboration to move GPNC to scale in the state. Five sites implemented GPNC in 2013, two sites implemented GPNC in 2014, and three additional sites will apply and be selected to implement the intervention in 2015.

1.2 Specific Aims

Recognizing of the importance of process evaluation, SC DHHS funded this evaluation on the scale-up of GPNC in South Carolina. This was a prospective, mixed-

4

methods process evaluation of CP scale-up throughout the state from 2013 to 2014. The purpose of this evaluation research was to enhance the understanding of necessary contextual elements, policies, structures, and strategies that facilitate or impede formal scale-up of an intervention to the state level (Fixsen et al., 2005). The results may be particularly useful for future healthcare, government, and donor interventions in scaling up research-based interventions within existing health systems.

Specific aim 1: To identify and describe the multi-level contextual elements that influenced statewide scale-up of a healthcare intervention, and how stakeholders viewed and approached these contextual elements.

- *Research question 1.1:* What were the relevant internal and external contexts and how did they influence a coordinated statewide scale-up of a healthcare intervention within an existing healthcare system?

- *Research question 1.2:* What strategies did implementers use to address and manage opportunities and challenges presented by contexts when scaling up a healthcare intervention within an existing healthcare system?

Specific aim 2: To identify the degree of completeness and fidelity that sites achieved during GPNC implementation.

- *Research question 2.1:* To what extent was implementation complete; that is, was CenteringPregnancy implemented with the educational components, materials, and provision of care stipulated in the model?

- *Research question 2.2:* To what extent was CenteringPregnancy at each site implemented with fidelity, in relation to the CenteringPregnancy 13 Essential Elements?

Specific aim 3: To identify the system-level essential (core) strategies, settings, policies, and structures that facilitated or challenged formal scale-up of GPNC to the state level.

- *Research question 3.1:* What strategies, settings, policies, and structures contributed to or impeded a coordinated GPNC scale-up effort?

1.3 Overview of the Dissertation

Chapter 2 contains a detailed discussion of the background and significance of implementation science in scaling up an evidence-based healthcare intervention within existing healthcare systems. The research methods for the quantitative and qualitative work are outlined in Chapter 3. Two manuscripts are presented in Chapter 4. In the discussion of the first manuscript, "Scaling up an Evidence-based Healthcare Model to the State Level," the multi-level contextual elements that influence scale up of an evidence-based health model within an existing healthcare system are identified. The second manuscript, "Multi-site Group Prenatal Care Process Evaluation" details the degree of completeness and fidelity that sites achieved during GPNC implementation. Chapter 5 is a guide for future statewide scale-up of GPNC.

CHAPTER 2: BACKGROUND AND SIGNIFICANCE

The literature selected to guide this process evaluation of statewide group prenatal care (GPNC) scale-up included previous research and reflection related to scaling up interventions, policy agendas regarding bringing interventions to scale, and how implementation science and systems science are essential to scaling up health interventions. Literature is also reviewed to demonstrate the importance of process evaluation in intervention implementation. The significance of poor maternal and child health outcomes in the United States and in South Carolina are explained, and how stakeholders chose to scale up a specific model of GPNC to the state level to address these issues is described. The chapter concludes with a review of the specific aims of the research, the conceptual models used to guide the work, and an explanation of how this evaluation is situated within current literature.

2.1 Scaling up Interventions

The term *scaling up* an intervention has a variety of meanings depending on the sector, context, and key actors involved, and therefore, there is no concise and transdisciplinary definition for the term (Billings, Crane, Benson, Solo, & Fetters, 2007; Hanson, Cleary, Schneider, Tantivess, & Gilson, 2010; Hartmann & Linn, 2008; Mangham & Hanson, 2010; Simmons et al., 2007). Scaling up interventions is much more complicated than simply increasing the number or breadth of interventions and necessary finances in a linear approach.

Scaling up a health intervention is conceptually and logistically complex, with multiple dimensions and components (Paina & Peters, 2012; Robb-McCord & Voet, 2003; Simmons et al., 2007; Subramanian, Naimoli, Matsubayashi, & Peters, 2011). Environments, resources, plans, system structures, and policies are multifaceted, with multiple levels within systems that need to be addressed (Simmons et al., 2007). Systems are also made up of diverse actors who have nuanced interactions with one another. Systems adapt and react to changes as a result of implementing a new intervention; actors within organizations learn from changes. Change, therefore, occurs within these complex systems in non-linear ways, with a level of uncertainty and uniqueness as a result of context (Paina & Peters, 2012). Additionally, interventions that are not intentionally designed to be simple enough to move to scale, they are often too complex (Simmons et al., 2007).

The World Health Organization (2007) defined scaling up health service innovations as "efforts to increase the impact of innovations successfully tested in pilot or experimental projects so as to benefit more people and to foster policy and programme development on a lasting basis" (p. i). This is the conceptual definition we adopted as a foundation for this process evaluation. Implementation of innovations (or interventions) is the transferring of new or tailored knowledge to changes within systems, organizations, programs, and activities within the constraints of local realities (Fixsen et al., 2005; Gilson & Schneider, 2010). In this way, both implementation and scale-up occur as part of multifaceted social and political pathways, strategies, settings, and structures (Fixsen et al., 2005; Gilson & Schneider, 2010; Glasgow et al., 2012; Simmons et al., 2007).

8

The three main phases of scaling up evidence-based public health approaches are start-up, expansion, and institutionalization. In the start-up phase, implementation of the model occurs, stakeholder collaboration is established, and resources are garnered. The expansion phase involves building advocacy and political support, making investments to improve capacity and resources, and generating and communicating the body of knowledge and evidence. The intervention is implemented in multiple sites, each with its own unique characteristics and particularities that need to be considered during implementation (Billings et al., 2007).

After initial start-up and expansion of the intervention, institutionalization is a critical element in scaling up evidence-based public health approaches (Billings et al., 2007). Institutionalization involves incorporating an intervention into existing health systems in ways that are feasible and sustainable (Billings et al., 2007; Scheirer & Dearing, 2011; Shediac-Rizkallah & Bone, 1998). These interventions then become part of the adapted system; that is, they become the new norm of service delivery, benefiting participants over time. This new standard of care is then favored by organizational norms and values that changed due to its implementation (Billings et al., 2007; Gilson & Schneider, 2010).

As the intervention becomes entrenched and strengthened within the larger system, accessibility and availability of the intervention improve (Billings et al., 2007; Fixsen et al., 2005; Gilson & Schneider, 2010; Scheirer & Dearing, 2011). Scaling up an intervention involves building lasting political support and maintaining partnerships throughout the process among multiple stakeholders, including community members and

leaders, practitioners, researchers, decision makers, and policy makers (Billings et al., 2007; Fixsen et al., 2005; Gilson & Schneider, 2010; Scheirer & Dearing, 2011).

An important aspect of all three phases of the scale-up process is that people involved in these partnerships have individual values that are navigated and transferred during their interactions (Clark, 2002). These relationships, which are reflections of stakeholder values, can enhance or deter implementation (Atun, de Jongh, Secci, Ohiri, & Adeyi, 2010; Azzam, 2010); they will be discussed in further detail in the section on setting policy agendas. Successfully scaled-up interventions are marked by plans for:

- adequate time for planning and implementation,
- sustained funding,
- continuous involvement of stakeholders,
- supportive socio-political environment,
- strong infrastructure,
- firm commitment to training and supervision,
- clear and convincing messages about the of the intervention to the community,
- adaptability of the intervention to local contexts,
- well-planned process and outcome evaluations (de Savigny & Adam, 2009; Fixsen et al., 2005; Paina & Peters, 2012; Simmons et al., 2007).

Although evidence-based solutions to promote public health exist and may spread spontaneously, rate and consistency at which they are implemented and spread is usually not enough to meet the demands created by the current burden of the world's major health concerns (McCannon et al., 2007; Simmons et al., 2007). There are also constraints to health systems cause by external elements, such as funding from or relationships with donors, or the political environment (Atun et al., 2010). Consequently, policy makers and practitioners should pursue deliberate scale-up efforts through collaborations (Glasgow et al., 2012; McCannon et al., 2007; Shiffman, 2007; Simmons et al., 2007). Diffusion of an innovation within an adaptive health system situated in a

10

complex environment occurs through often-unpredictable interactions between the innovation and the system. These interactions influence institutionalization of the innovation, and well-planned scale-up efforts are required to navigate these interactions (Atun et al., 2010).

2.2 Setting Policy Agendas

Without diffuse implementation of evidence-based health solutions, there is a risk of missed opportunities to improve people's lives and health through effectively using the time, energy, and funding initially spent creating these interventions. For most interventions to reach people in need outside of small areas of success, scale-up of effective interventions is necessary (McCannon et al., 2007). To improve maternal and child health outcomes, especially among vulnerable groups, universal access to effective care should remain a priority through increased availability and accessibility. Addressing barriers to care can help reduce health disparities (Simmons et al., 2007; United Nations, 2014).

Scaling up public health interventions within existing healthcare systems is an example of a policy-setting agenda and is one of the challenges to creating large-scale changes in public health. Policy-makers must not only recognize, or pay attention to, the burden of public health issues as a problem; they also need support and funding to address them and the commitment to make the issue a political priority. Once the agenda has been set and the policy created, it takes capacity and resources to move the intervention to action. These, among other external influences discussed later, can create barriers to scaling up evidence-based health interventions (Davis & Howden-Chapman, 1996; Pelletier et al., 2012; Shiffman, 2007).

11

As with any social process, public health interventions involved participants (from individuals to organizations), perspectives (identifications, demands, and expectations), values, situations, strategies, outcomes, and effects (Clark, 2002). All interactions between people involve navigating and transferring personal values that they want to maximize (Lasswell, 1971), which are situations and things they "desire, aim at, wish for, or demand" using strategies (Clark, 2002, p. 25). Strategies are techniques that people use to manage their values (Lasswell, 1971). Lasswell (1971) developed eight commonly recognized values that Clark (2002, p. 27) later expounded:

- Power: "participation in decision-making"
- Enlightenment: "accumulation of knowledge"
- Wealth: "control of resources"
- Well-being: "safety, health, and comfort"
- Skill: "acquisition and exercise of talents"
- Affection: "love, intimacy, friendship, loyalty, and positive sentiments"
- Respect: "recognition, freedom of choice, and equality"
- Rectitude: "participation in forming and applying norms of conduct."

Policy agendas can be set most successfully within specific windows of opportunity that are only open for limited periods of time because they occur when problems and solutions are connected (Kingdon, 2011; Simmons et al., 2007) or because they have been intentionally created (Lapping et al., 2012). Strategic choices can be made through building relationships and alliances with policy makers and supporters to get public health agendas into policy-building systems and to foster policy champions (Lapping et al., 2012; Pelletier et al., 2012). Advocacy during windows of opportunity is required to actively build political commitment to interventions because there are multiple problems competing for resources and attention on agendas (Gilson & Schneider, 2010; Simmons et al., 2007). The creation or utilization of opportunities, large

12

and small, is indispensible to moving interventions to scale (Lapping et al., 2012).
Advocates should also consider ways to sustain the intervention after windows of
opportunity close, as when administration or financing changes or if stakeholders feel
that the problem has been addressed (Simmons et al., 2007). One way to understand how
policy agendas are set and how values are exchanged in real-world contexts is through
implementation science.

2.3 Implementation Science and Systems Science

There is currently a large gap between the evidence-base of approaches to
addressing health problems and widespread implementation of health interventions that
successfully address those problems among different sectors of populations (Fixsen et al.,
2005; Glasgow et al., 2012). This gap results, in part, from the challenges of integrating
interventions within complex health systems. The incorporation of an intervention at the
organizational level in health systems changes those systems and necessitates system-
wide planning, governance and leadership, funding and resources, service delivery,
evaluation, and demand for services by patients and communities (Atun et al., 2010). The
term *implementation* refers putting into practice components of an intervention or
activities that are delivered within a specific setting (Durlak & DuPre, 2008).

Durlak and DuPre (2008) identified eight conditions for implementation of
prevention and health promotion interventions in a meta-analysis of 542 studies: fidelity,
dosage, quality, participant responsiveness, program differentiation, monitoring
control/comparison groups, reach, and adaptation (Table 2.1).

Table 2.1. Conditions for Implementation

Implementation component	Definition
Fidelity	"the extent to which the innovation corresponds to the originally intended program (aka adherence, compliance, integrity, faithful replication)" (p. 329)
Dose Delivered	(completeness) is the quantity of the original program
Dose received	participant responsiveness or attentiveness
Quality	how well the program was conducted
Program differentiation	the uniqueness, or how it is distinguished theoretically and practically from other programs
Monitoring control/comparison groups	"involves describing the nature and amount of services received by members of [control and comparison] groups" (p. 329)
Reach	The rate at which the target population participates in the program, as well as the representativeness of participants
Adaptation	modifications made to the original program

Durlak and DuPre also reported that among a subset of 59 implementation studies on prevention and health promotion interventions for youth, data were most often provided regarding fidelity (37 of 59), then dosage (29 of 59). Only 18 studies evaluated more than one aspect of implementation. While a majority of the studies (45 of 59) found an association between the level of intervention implementation and positive outcomes, Durlak and DuPre reported that outcomes could be expected by meeting between 60% to 80% levels of implementation. Few of the studies they examined reported levels of 80% implementation, and no studies in the meta-analysis reported perfect implementation for every provider. Therefore adequate implementation through obtaining 60-80% implementation criteria can have positive results, while perfect or near perfect implementation is rare. This evidence supports the use of intervention adaptation to better fit the context in which it is implemented (Durlak & DuPre, 2008).

14

Process evaluation involves examining the strengths and limitations of interventions, monitoring implementation in real-time, and studying influences, including context, that could have an impact on implementation (Saunders, Evans, & Joshi, 2005). Process evaluation can be both formative, with the goal of ensuring the intervention is implemented as planned, and summative, to describe what happened throughout the process, who was reached, and how the outcomes are related to these findings (Durlak & DuPre, 2008; Saunders et al., 2005).

Through process evaluation, records are kept on intervention activities, interactions between stakeholders, sociopolitical influences, and other environmental contexts. Process evaluation is an essential part of implementing a new intervention because it helps elucidate why the it has or does not have expected impacts (outcomes), as well as which of the intervention's features were successful and which ones were not. It also provides a means through which groups can learn from the successes of other interventions (King et al., 1987). Durlak and DuPre (2008) concluded that it was clear that "the level of implementation affects the outcomes obtained in promotion and prevention programs" (p.327); higher levels of implementation can lead to higher rates of success and stronger positive outcomes. Therefore, level of implementation is one very important aspect measured in process evaluation (King et al., 1987).

The significance of scale-up processes, practices components, and interactions cannot be understood without critically examining context using a wide lens. According to Clark, "all things are interconnected and that the meaning of anything depends on its context" (2002, p. 32). Implementing and integrating interventions into complex health systems is influenced by multiple levels of contextual elements: community context,

provider characteristics, intervention characteristics, internal system-level context, as well as training and technical assistance (Durlak & DuPre, 2008).

Systems science provides an approach to implementing and scaling up interventions within adaptive, complex and complicated health systems (de Savigny & Adam, 2009; Paina & Peters, 2012). Interventions can be both complex (with reinforcing loops and emergent outcomes) and complicated (with multiple levels or components). The multifaceted relationships among all of these contextual elements are non-linear and recursive (Atun et al., 2010; Gericke, Kurowski, Ranson, & Mills, 2005; Hartmann & Linn, 2008; Simmons et al., 2007). When interventions are complex and complicated, the use of complex program theory evaluation is necessary. Analyzing the pathways to scale-up using a complex adaptive system perspective has been underutilized in the health sector and has the potential to provide useful insights in how and why change occurs (Paina & Peters, 2012). Incorporating systems science allows evaluators to consider feedback loops, emergent behaviors, and context (de Savigny & Adam, 2009; Paina & Peters, 2012) within "diverse social, political, and cultural contexts" (Paina & Peters, 2012, p. 366), including health system bureaucratic culture (Simmons et al., 2007). "It demands a deeper understanding of the linkages, relationships, interactions and behaviours among the elements that characterize the entire system" (de Savigny & Adam, 2009, p. 33) and their environment (Simmons et al., 2007).

External forces, systems, processes, activities, financial and other resource inputs, and values can all produce opportunities and challenges (Hanson, Ranson, Oliveira-Cruz, & Mills, 2003; Pallas et al., 2013; Simmons et al., 2007). While there is ample literature regarding the dichotomy of facilitators and barriers within implementation and scale-up,

16

there are important nuances and complexities among factors that support and hinder intervention implementation (Fixsen et al., 2005). This is essential because these aspects cannot always be clearly demarcated, as systems often adjust and readjust throughout the process. These responses can create changes in the intervention or its effects (i.e., feedback loops) and systems within which interventions are applied can be unpredictable (de Savigny & Adam, 2009). Some challenges, or constraints, may influence implementation negatively within certain contexts (Atun et al., 2010) while proving to cultivate opportunities for implementation under other circumstances (de Savigny & Adam, 2009). Challenges could also be managed through strategies and resources to become assets (Hanson et al., 2003). Therefore, learning how to achieve scale-up requires a depth of understanding that cannot be gained by simply listing facilitators and barriers.

In order for other groups to replicate an intervention, it is necessary to understand the opportunities and challenges that are presented during implementation and scale-up, as well as how implementers were able to overcome difficulties and come up with creative solutions to meet challenges (King et al., 1987; Patton, 2008). Monitoring and evaluating the process of scaling up health interventions is critical for understanding how the intervention was implemented, identifying the multiple pathways to outcomes (or lack thereof), and enhancing the potential success and institutionalization of the scaled up intervention through evaluator feedback (Hanson et al., 2010; Hartmann & Linn, 2008; Simmons et al., 2007).

2.4 Maternal and Child Health in the United States and South Carolina

The state of maternal and child health in the United States is inadequate and these outcomes cannot improve with current health systems (Rising, Kennedy, & Klima, 2004;

17

United States Department of Health and Human Services, 2010). *Healthy People* goals related to maternal and child health include: reducing fetal and infant deaths, reducing low birth weight and very low birth weight babies, reducing preterm births, increasing the percent of pregnant women receiving early and adequate prenatal care, increasing breastfeeding, and reducing racial and ethnic disparities in infant mortality (United States Department of Health and Human Services, 2010). Given that *Healthy People 2020* goals set during the past 20 years have not been met, innovative prenatal care techniques are necessary to address them (C. Klima, Norr, Vonderheid, & Handler, 2009). The cost of these healthcare issues, especially preterm births, is substantial to the existing healthcare system (United States Centers for Disease Control and Prevention, 2013).

The rate of infant deaths in 2007 in the US was 6.75 per 1,000 live births, which was slightly higher than the rate in 2006 at 6.28 per 1,000 live births (United States Centers for Disease Control and Prevention, 2011). Each year in the US, nearly 500,000 infants are born prematurely (i.e., prior to 37 weeks gestation) at a cost of almost $26 billion per year to the healthcare system (United States Centers for Disease Control and Prevention, 2012). High rates of premature births and low birth weight births account for much of the infant mortality rate. Very low birth weight infants (<1,500 grams) had more than 100 times the mortality rate than normal birth weight infants (greater than or equal to 2,500 grams) and low birth weight infants (<2,500 grams) had 25 times higher mortality rates than normal birth weight infants in 2007 (United States Centers for Disease Control and Prevention, 2011). Neonatal deaths, which are associated with outcomes at birth, were 4.8 per 1,000 in 1998 and only declined to 4.5 per 1,000 in 2006 (National Center for Health Statistics, 2012). About 29.5 percent of women in the US in

18

2007 did not receive early and/or adequate prenatal care (United States Centers for Disease Control and Prevention, 2013).

Nationally, poor birth outcomes and rates of inadequate prenatal care are problematic, and South Carolina is widely recognized for having high levels and serious racial disparities in both. In 2011, South Carolina had the 7th highest infant mortality rate of all fifty states in the nation at 7.4 per 1,000 live births. This was higher than the national rate of 6.07 per 1,000 live births and than the Healthy People 2020 goal of 6.0 per 1,000 live births. The infant mortality rate in 2011 of Black infants in South Carolina, 11.67 per 1,000 live births, was almost twice the rate for White infants at 5.36 per 1,000 live births (United States Centers for Disease Control and Prevention, 2015; United States Department of Health and Human Services, 2010).

While there is still work to be done in the state, trends in infant mortality are moving in the right direction. In a recent 2014 press release, the SC Department of Health and Environmental Control (South Carolina Department of Health and Environmental Control, 2014) reported that infant mortality dropped in 2013 to 6.9 per 1,000 live births overall. The rate was still high for Black infants at 10 per 1,000. South Carolina was also tied in 2011 for 15th highest in the US for neonatal deaths (under 28 days) at 4.46 per 1,000 live births. Black neonates in South Carolina were 2.2 times more likely to die (7.09 per 1,000 live births) than White neonates at 3.22 per 1,000 live births (United States Centers for Disease Control and Prevention, 2015). In 2010, 30.3% non-Hispanic Black women did not receive adequate prenatal care compared to 19.2% of non-Hispanic White women (South Carolina Department of Health and Human Services, 2013).

19

2.5 The Scaled-up Intervention: Group Prenatal Care

2.5.1 CenteringPregnancy

CenteringPregnancy (CP) was developed over two decades ago by Sharon Schindler Rising and piloted in an East Coast hospital-based clinic in the early 1990s (Rising et al., 2004). There are currently over 350 sites in the United States offering CP (Centering Healthcare Institute, 2015) and it has been implemented globally in Australia (Teate, Leap, Rising, & Homer, 2011), the United Kingdom (Gaudion et al., 2011), Canada (Benediktsson et al., 2013), Sweden (Andersson et al., 2013), Malawi, and Tanzania (Patil, 2013).

The three key components to the CP model of care are health assessment, education, and support (Centering Healthcare Institute, 2009c). A licensed clinical care provider conducts *healthcare assessments* during group time in a private corner in the same group space. This examination focuses on health and psychosocial needs. Questions may be answered directly, or brought up to the entire group. The clinician is responsible for ensuring that charting is completed for tracking follow-up visits and billing. During the assessment, women practice self-care activities, such as being shown to accurately assess their own blood pressure, weight, and body mass index to contribute the information to their medical chart. They also use participant self-assessment sheets, track their goal-setting forms, and document the baby's gestational age. A nurse or medical assistant helps women as they learn to complete the assessments. The aim is for women to have a better understanding and appreciation for their health information through this interactive process. This information is written in women's medical charts and in their CP

notebook. Each woman receives a notebook with educational information that she can use at home and during group time (Centering Healthcare Institute, 2009c).

Groups are conducted using facilitative, rather than authoritative or didactic, methodologies by two trained facilitators. The facilitation team consists of at least one licensed healthcare provider and a second person, such as a social worker, nurse, or other clinic staff person. CHI has determined a range of *educational topics* for each of the ten group sessions, and the content is generally associated with gestational age. These topics are generally covered order (Table 2.2), however, the facilitative style of CP allows for flexibility when new issues emerge that are important for the group to discuss (Centering Healthcare Institute, 2013). Facilitation is a process based on adult learning principles, that participants learn best when they are interested and engaged in the materials and process. Prior to implementing groups, CP facilitators and administrators attend a two-day, participatory CP Facilitation Workshops conducted by the CHI staff. Content includes key components and essential elements of CenteringPregnacy, as well as skills to provide facilitative GPNC.

Table 2.2 Centering Pregnancy Educational Content

Session Number	Weeks Gestation	Educational Content
Session 1	12-16	My pregnancy, what's most important? Personal goals, group guidelines, confidentiality agreements and photo release, prenatal testing, nutrition, and healthy lifestyle choices
Session 2	16-20	Common discomforts, body changes during pregnancy, back pain, and oral health
Session 3	20-24	Relaxation, breastfeeding, family dynamics
Session 4	24-28	Family planning and safe sex, safety, family dynamics, sexuality, domestic violence/abuse, fetal brain development, and preterm labor
Session 5	26-30	How am I doing? Comfort during labor, labor and breathing, birth facilities, medications, early labor

Session 6	28-32	Labor decisions, birthing experience
Session 7	30-34	Decisions after the baby is born, newborns, pediatric care, caring for your baby, circumcision, brothers and sisters
Session 8	32-36	Feelings, parenting, kick counts, emotions, baby blues, postpartum depression
Session 9	34-38	Thinking ahead, putting it together, newborn safety, infant massage
Session 10	36-40	Newborn care, growth and development, home and family changes, mom and newborn postpartum – when to call the clinic
Postpartum		Reunion (optional)

Purported benefits to participants are friendships, community, and *support*. Often, women continue these relationships outside of the group setting. The purpose of CP is to provide safe, efficient, effective, timely, culturally appropriate, patient-centered, and equitable care for women throughout their pregnancy (Centering Healthcare Institute, 2009b). Potential individual and relational outcomes of CP are listed in Appendix A and include prenatal care that is based on healing, improved health outcomes for mother and infants, continuous relationships, tailored to patient-needs and values, shared knowledge among group members, continuous evaluation of CP, safety, transparency of healthcare, involvement of women in self-care, anticipated needs of women, efficient use of time and space, and cooperation among healthcare providers (Rising et al., 2004). The assessment, education, and support, in the CP model follow the 13 essential elements of group care (Table 2.3) as outlined by CHI (Centering Healthcare Institute, 2009a, 2009b).

Table 2.3 Essential Elements of CenteringPregnancy (Rising et al., 2004, p. 399)

Essential Elements
Health assessment occurs within the group space.
Participants are involved in self-care activities.
A facilitative leadership style is used.
The group is conducted in a circle.
Each session has an overall plan.
Attention is given to the core content, although emphasis may vary.

There is stability of group leadership.
Group conduct honors the contribution of each member.
The composition of the group is stable, not rigid.
Group size is optimal to promote the process.
Involvement of support people is optional.
Opportunity for socializing with the group is provided.
There is ongoing evaluation of outcomes.

All CP sites are provided with training, support, facilitators guides, and group activity tools through CHI. Additionally, ongoing training and technical support are provided throughout the process to each site through CHI. Sites provide medical equipment, snacks, water, recruitment materials, and educational materials for the group space, such as posters and videos (Centering Healthcare Institute, 2013).

In CP, eight to twelve women with similar due dates meet regularly ten times throughout their pregnancy with the same group of women and their group facilitators for 1½ to 2 hours. There are four sessions every four weeks between 16 to 28 weeks gestation and six sessions every two weeks between 30 to 40 weeks gestation, with an optional postpartum reunion at one to two months postpartum. Each session includes 30-40 minutes for the healthcare provider (co-facilitator) to check each woman individually in a private area of the group room, while other women socialize (Centering Healthcare Institute, 2009a).

The formal circle time, where women and facilitators sit in chairs in a circle, takes 1 to 1½ hours and involves an opening, orientation, self-assessment sheet topics and activities, discussion topics (Table 2.2), and a closing. After each session, the co-facilitators complete self-evaluation, attendance, and benchmarking forms (Centering Healthcare Institute, 2013).

The CP model was developed through incorporating four major approaches (Rising et al., 2004): feminism, the midwifery model of care, social support, and self-efficacy. One aspect of a *feminist* model of care for women that is central to CP is to balance the otherwise and often unequal power between pregnant women and their healthcare providers. This model also focuses on providing women access to information about their health and opportunities for them to participate in decision-making processes (Andrist, 1997). CenteringPregnancy focuses on the experiences and concerns of participants, rather than on those of the healthcare system. Women participate in self-care and are privy to information in their medical charts. Through the group process, they can become advocates for themselves (Rising et al., 2004).

A second important framework is the *midwifery model of care*, through which both the healthcare provider and woman bring knowledge and experiences to the relationship, initiating a balance in power and trust between them (Kennedy, 1995). CenteringPregnancy allows women to meet with their healthcare provider for 20 hours, through which, they know each other in ways that go beyond standard prenatal care (Rising et al., 2004).

CenteringPregnancy offers opportunities for women to build social support networks through the group setting. Social support can be helpful to pregnant women's well-being (Norbeck, 1981) and groups allow pregnant women to become affiliated with a community of women who share common experiences and concerns. Through the group process, participants can develop skills, change their attitudes, and improve responsibility. Social support is built into the CP model through peer-to-peer interactions and subsequent support that develops throughout the meetings. Participants' family and

24

friends may provide additional social support through encouragement outside of the group space (Rising et al., 2004). *Self-efficacy* during pregnancy refers to a woman's sense of agency that can change her perceptions and behaviors, which may improve health outcomes. The group setting allows women to learn from the strengths of the group to model self-efficacy in dealing with their own stresses (Rising et al., 2004).

2.5.2 Group Prenatal Care Expansion in South Carolina

There are many models of GPNC. Examples are group prenatal care for adolescent mothers in the Midwest US (Ford et al., 2002), Healthy Pregnancy, Healthy Childbirth, Healthy Parenting in the Northwest US (Tilden, Hersh, Emeis, Weinstein, & Caughey, 2014), small group prenatal care for teenagers (Fullar, Lum, Sprik, & Cooper, 1988), and a Danish model of GPNC adapted for use in the Swedish context (Wedin, Molin, & Svalenius, 2010). CenteringPregnancy is a research-based model of GPNC that has shown promising results in improving maternal and child health outcomes and potentially reducing maternal and child health disparities (Grady & Bloom, 2004; Ickovics et al., 2007; Ickovics et al., 2003), including in South Carolina (Picklesimer et al., 2012), has engaged women during their transition to motherhood (Duggan, 2012), with higher initiation of breastfeeding (Tanner-Smith et al., 2013), educationally (Ickovicks et al., 2007), improved post-partum family planning (Hale et al., 2014), and in terms of psychosocial outcomes for women most at risk (Heberlein et al., 2015). Leaders at Grenville Health Systems used these outcomes to motivate plans to scale-up CP as the piloted intervention.

Prior to the scale up of GPNC in 2012, there were two practices providing CP in South Carolina. One was a private practice in Easley and the other was at Greenville

Health System. In 2011, South Carolina March of Dimes comprehensively funded two interventions statewide, including a non-profit in South Carolina that works to promote healthy Latino families and Greenville Health System to continue providing CP and expand CP to other sites. In 2014, South Carolina March of Dimes still funded CP at Greenville Health System, consortium meetings, implementation seminars for new sites, and one Model Implementation Seminar provided by the Centering Healthcare Institute (Covington-Kolb, 2014).

In 2012, the team at Greenville Health System contacted the SC Medicaid Administrative Offices and was referred to the Director of the SC DHHS to discuss state level support for a Strong Start Initiative application to expand CP to more sites throughout the state. The United States Department of Health and Human Services began the Strong Start initiative as a joint effort among the Centers for Medicare and Medicaid Services, the Administration on Children and Families, and the Health Resources and Services Administration. The aims were to reduce preterm birth rates, as well as improve birth outcomes for infants and health outcomes for pregnant women. One of their efforts was to test innovative prenatal care interventions, such as CP, through a four-year initiative. They specifically targeted women enrolled in Medicaid or CHIP (Centers for Medicare & Medicaid Services, n.d.).

Greenville Health System presented to SC DHHS the South Carolina-specific positive birth and disparities outcomes from GPNC, including significantly reduced preterm delivery and elimination of racial disparities in preterm delivery (Picklesimer et al., 2012). Rather than apply for Federal funding, Greenville Health System was encouraged to work directly with SC DHHS who began to invest in CP expansion to sites

26

throughout the state as a key strategy for improving birth outcomes and reducing racial disparities in birth outcomes.

The South Carolina Department of Health and Human Services (SC DHHS), Greenville Health System, and South Carolina March of Dimes collaborated in an attempt to address poor birth outcomes at a state level by scaling up CP. From 2013 through 2015, SC DHHS funded GPNC expansion sites, process evaluation, and enhanced reimbursement above reimbursement for routine prenatal care at $30 per patient per visit up to $150 to providers through Medicaid Managed Care Organizations for each patient with five or more CP visits (Covington-Kolb, 2014). BlueCross BlueShield of South Carolina and BlueChoice Healthplan of South Carolina also offered additional reimbursement above the global maternity rate for women in CP to providers at $30 per patient up to 10 CP sessions and $175 per patient with five-session retention (BlueCross BlueShield and BlueChoice of South Carolina, 2014). Expansion sites were selected through a competitive application process. Interested sites were required to attend an initial informational meeting (CHI Model Implementation Seminar) and then invited to submit an application. A panel of experts selected practices based on each practice's readiness to implement GPNC; the panel includes members from Greenville Health System, CHI, and one member of the process evaluation team. Applications were reviewed by a committee, and selected based on a "readiness score" of obstetric volume, physical space available for groups, and leadership support for implementation. Practices with higher Medicaid volumes were given priority due to the enhanced funding made available for CP through Medicaid. Five sites were awarded up to $30,000 to fund training and start-up costs, and these sites began to implement GPNC in 2013. Two sites

were selected in 2014, and three sites were selected in 2015 (Greenville Health System, 2012, 2014).

2.6 Specific Aims and Conceptual Model

The philosophies and essential elements of CP were used to inform the research questions for the process evaluation. The specific aims of this research were to: 1) identify and describe the multi-level contextual elements that influence statewide scale-up of a health model and the ways in which stakeholders viewed and approached these contextual factors; 2) identify the degree of completeness and fidelity that sites achieved during GPNC implementation; and 3) identify the system-level essential (core) strategies, settings, policies, and structures that facilitated or challenged formal scale-up of GPNC to the state level. The primary goal of this study is to inform future healthcare, government, and donor programs in scaling up evidence-based healthcare to the state level.

A conceptual model (Figure 2.1) for GPNC scale-up was developed based on models and concepts from Billings et al. (2007), Clark (2002), de Savigny and Adam (2009), Kingdon (2011), and Fixsen et al. (2005). The three phases of scale-up – start-up, expansion, and institutionalization – described by Billings et al. in their study on post-abortion care scale-up in Bolivia and Mexico were used to guide data analysis for this process evaluation. Due to the complexity of health systems, processes contributing to scale-up were expected to influence and be influenced by the internal contexts of individual health systems, as well as the external systems within the state that contributed to scale-up (de Savigny & Adam, 2009; Gillespie, Haddad, Mannar, Menon, & Nisbett, 2013).

In addition to the three main phases of GPNC scale-up that occurred in Bolivia and Mexico (Billings et al. 2007), there were three main separate, but concurrent phases of implementation that emerged at the individual site level (i.e., pre-implementation, implementation, and incorporation). These phases are similar to those described by Fixsen et al. (2005). Site implementation and state-level scale-up were influenced by external contextual elements (Billings et al., 2007; de Savigny & Adam, 2009; Fixsen et al. 2005). Stakeholders made use of and created windows of opportunity at the individual health system level and at the statewide scale-up level (Kingdon, 2011; Lapping et al., 2012). Additionally, motives, decisions, and actions of stakeholders were reflections of their values (Clark, 2002). Each aspect of these social processes, contextual elements, and their interactions are described in detail below. To understand scaling up GPNC to the state level it was important to describe how the process moved through the three phases of scale-up, and examine how system-level (internal) and external contextual elements interacted with the intervention (Chen, 2005).

According to the literature, the three main phases of the scale up process are start-up, expansion, and institutionalization (Billings et al., 2007). The start-up phase entails model implementation, stakeholder collaboration, and support through resources. For sites to move through to the expansion phase, advocacy, political support, and investments in capacity and resources are required. Evidence to support intervention expansion would clearly be communicated to stakeholders, policy makers, and the community to build additional support. When an intervention is incorporated into existing health systems in ways that are feasible and sustainable and that change the way care is

provided, the scale-up process would then move into the institutionalization phase (Billings et al., 2007).

Institutionalization of a health intervention involves lasting political commitment. During this phase, the intervention is available and accessible throughout the state and there is continued training, monitoring, and supervision of the intervention at each site. There are policies and procedures for the intervention that exist and are followed, and continued financial resources within system and state budgets (Billings et al., 2007).

Contextual elements directly and indirectly play a role in the implementation of the intervention at each site, and contextual support is critical to scale-up success (Chen, 2005). Generally, external elements such as community norms, culture, level of political support, and conditions of the local economy can impact intervention implementation (Chen, 2005).

The conceptual model utilized for the process evaluation of GPNC implementation (Figure 2.2) is both complicated (with multiple GPNC sites at the local level and participation of SC DHHS at the state level) and complex (with multiple potential feedback loops, such as the facilitators and sites influencing one another). Complicated systems can have multiple agencies involved, multiple causal paths to outcomes, and/or different causal paths, depending on the context (Rogers, 2008).
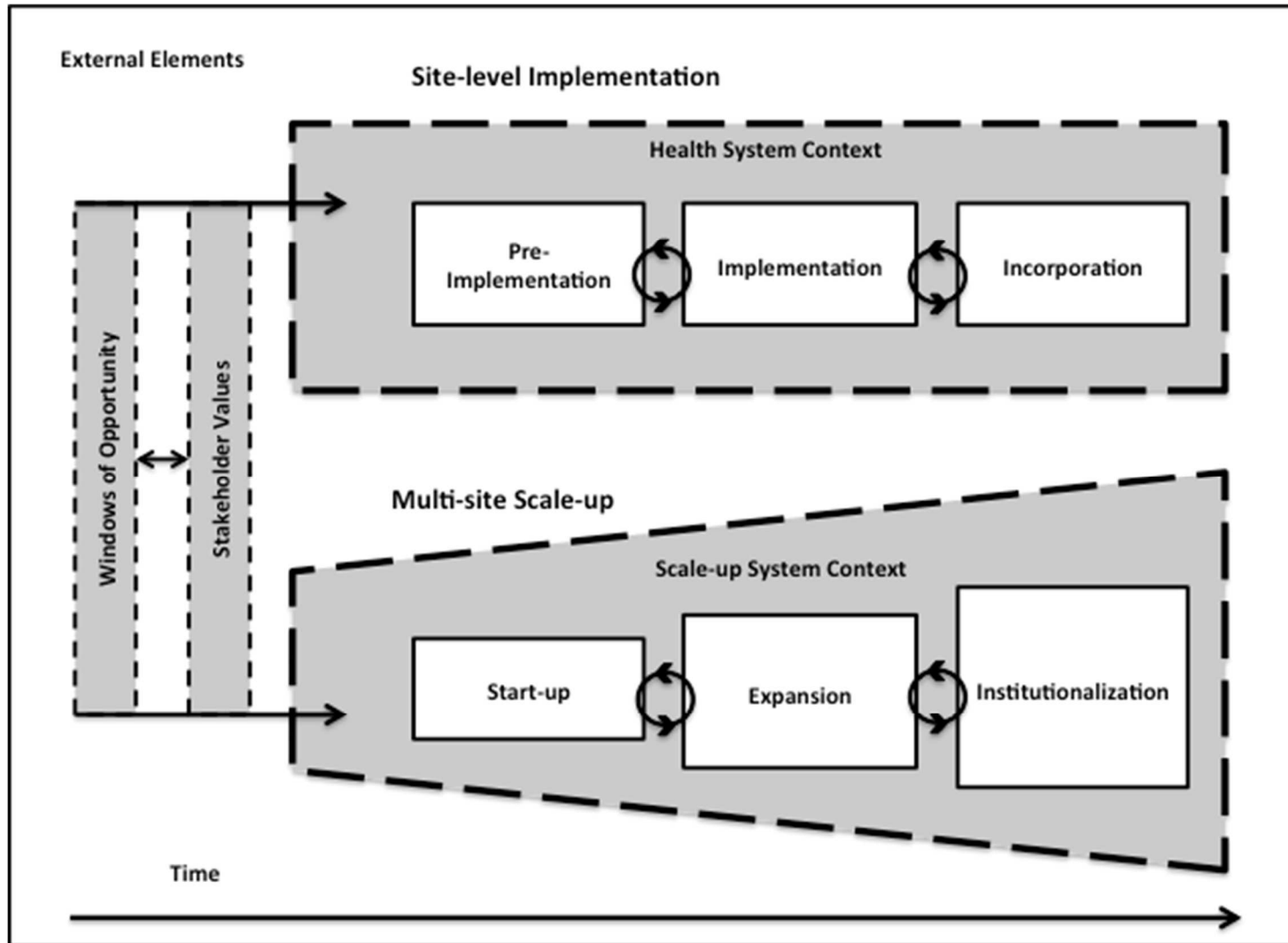
Figure 2.1. Framework for Implementing and Scaling up Group Prenatal Care across Existing Complex Health Systems

The action model and change model (Figure 2.2), in addition to the logic model (Appendix A) were used to define the specific aims, research questions, and methods (King et al., 1987; Saunders et al., 2005). Intervention support systems, or associate organizations (Chen, 2005), for GPNC scale-up are CHI, SC DHHS & South Carolina March of Dimes, Greenville Health System, health insurance companies, and community partners. These actors are expected to directly influence sites that in turn, can influence those support systems through collaborative relationships.

CHI is the overseeing company that provides training, protocols, and materials to healthcare service providers who provide CP. CHI produces and has authorization to change the *Facilitators Guide*. CHI provides technical support and may change their processes based on feedback from clients (sites).

Greenville Health System is a model site for CP in South Carolina and staff members from Greenville Health System have been instrumental to the scale-up process. Greenville Health System is the Statewide Expansion Coordinating site and oversees implementation, provides technical support, and chooses funding awardees for all new GPNC sites (Covington-Kolb, 2014). Through these dynamics, the relationships between Greenville Health System and the sites, as well as SC DHHS and the sites are expected to be bidirectional. Additionally, health insurance providers and GPNC sites may have a mutual relationship in which both parties influence each other. Sites may encourage the main insurers of their patient population to compensate for care.
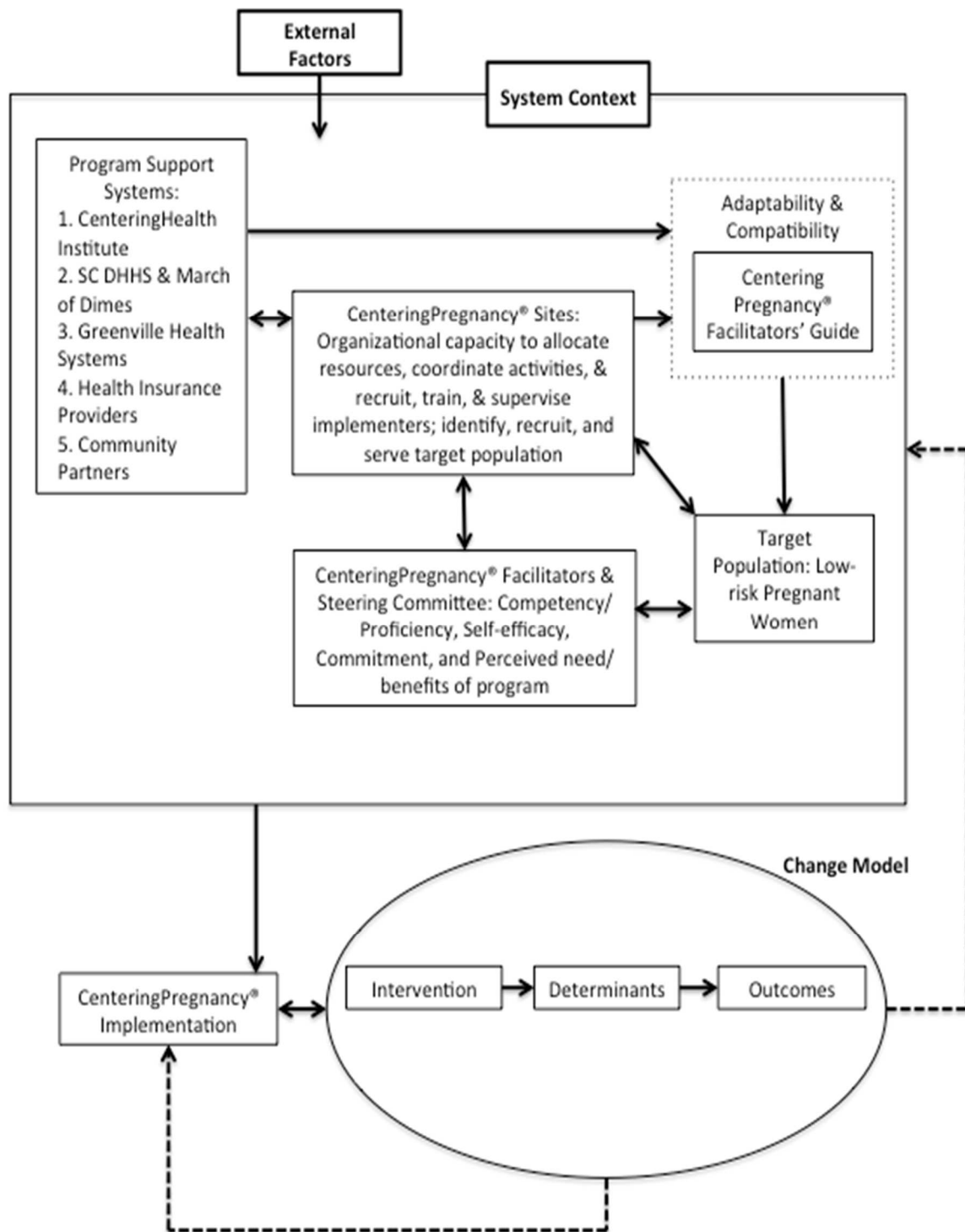
Figure 2.2. Conceptual Model for Process Evaluation of Group Prenatal Care Implementation.

33

Pregnant women who are enrolled in CP may alter sites based on their feedback, level of interest in CP, and their compliance with care. Each site aims to influence pregnant patients through recruitment and enrollment, as well as continued support throughout the intervention.

Each GPNC site has healthcare providers who were trained to facilitate groups. At least one licensed healthcare provider is required to facilitate each group, with a second facilitator who can be trained in any number of supportive professions. The bidirectional arrow in Figure 2.2 shows that providers are expected to impact their own organizations (sites) as employees, and sites oversee facilitators. Facilitator Guides are used to implement and conduct group sessions, through which women in the target population are provided the service of GPNC by facilitators. While women do not directly impact CP through the guide, they have opportunities to provide feedback to facilitators and to the sites directly about CP, potentially indirectly affecting the intervention.

Few studies have been published reporting strategies on GPNC implementation within existing healthcare systems. Potential challenges in CP implementation have been identified as the cost of the intervention, scheduling, adequate space for up to 20 people to meet comfortably, dedicating personnel to coordinate CP, training new staff, resistance to changing the current practice, learning to care for patients in a facilitative manner, reluctance of providers to refer to group care, and the difficulty of incorporating children or childcare into GPNC (K. Baldwin & Phillips, 2011; Hackley, Applebaum, Wilcox, & Arevalo, 2009; C Klima, 2009; G. S. Novick, Lois S.; Knafl, Kathleen A.; Groce, Nora E.; Kennedy, Holly Powell, 2013; Rising, 1998; Tanner□Smith, Steinka□Fry, & Lipsey, 2012). When challenges to GPNC model implementation arose, benefits for women who

received GPNC were shown to outweigh costs for providers (Baldwin & Phillips, 2011; Klima et al., 2009; Novick et al., 2013; Tanner-Smith et al., 2012).

Novick et al. (2013) found that the variation in CP implementation could be associated with efficacy and outcomes, such as preterm birth. Fidelity to the process of facilitative leadership and patient participation was significantly related to lower preterm births and intensive care visits, while fidelity to educational content in each session was associated with lower visits to intensive care, but not to lower preterm birth rates. Novick (2004) also suggested that there are three key components to widespread implementation of CP: research, education, and reimbursement or other funding. This work aims to describe the key components to scaling up CP to the state level, as well as to fill in gaps in the literature regarding third-party payers, staffing and other implementation elements, facilitator perceptions of CP training, experiences of facilitating groups, and adaptation of the model (Novick, 2004).

2.7 Significance of Implementation Research within Scaling up Interventions

Gaps exist between knowledge of evidence-based interventions and health services that are actually provided to the public. To address this phenomenon, an urgent call has been made to improve the understanding of implementation processes, as well as contextual factors that impact efficiency and effectiveness of implementation (Fixsen et al., 2005). The primary objective of this study is to inform future healthcare, government, and donor programs in scaling up evidence-based healthcare to the state level. Importantly, values (Clark, 2002) and strategies (World Health Organization, 2010) that stakeholders bring to the process of scaling up an evidence-based intervention to the state level can be elucidated. The process evaluation of this GPNC scale-up is an example of

implementation science that can provide an understanding of necessary components to implementing and sustaining an evidence-based intervention in real-world contexts (Glasgow et al., 2012). This research aimed to facilitate better understanding of contextual elements, policies, and structures that facilitated formal scale-up of evidence-based healthcare to the state level. Further describing how context, as well as organizational and system-level strategies were navigated in the scale up process is essential in developing the literature; information on how these strategies are used to promote collaborations is limited (Fixsen et al., 2005). The process evaluation design and methods are presented in the next chapter.

CHAPTER 3: PROCESS EVALUATION DESIGN AND METHODS

3.1 Process Evaluation Design

South Carolina DHHS scaled-up GPNC to ten sites across the state over the course of three years (2013-2015). This was a mixed-methods process evaluation of scaling up GPNC to five sites in South Carolina during CP implementation to enhance a deep understanding of promoting practices and environments, constraints, the complexity of each, as well as the essential strategies and processes that led to statewide scale-up of GPNC (Implementing Best Practices Consortium, 2007; Travis et al., 2004). Opening up the *black boxes* (Astbury & Leeuw, 2010; Cohen et al., 2008), or the "mechanisms that link cause and effect relations" (Astbury & Leeuw, 2010, p. 363) of the implementation process of a GPNC model will inform collective understanding of how GPNC is incorporated into the practice of prenatal care within existing health systems.

Process evaluation involved documentation of intervention inputs, activities, and outputs, as well as internal system and external contexts at each site (Appendix A). Theoretically, there are many elements that influence the implementation of an intervention (Chen, 2005). To capture these diverse elements involved in the scaling up of GPNC in South Carolina, the process evaluation included: in-depth individual and group interviews, systematic observations, document review, surveys, and media analysis. These methods are discussed in detail in the following sections. Results from this process evaluation can be used in future decisions about how CP is implemented, how it is scaled up to the state level, what components and strategies can be adapted at

local sites, and which aspects of the original model must be preserved to effectively scale up the initiative.

Using program theory as a guide for this process evaluation, I employed both prescriptive and descriptive assumptions. Prescriptive assumptions are defined by how designing, implementing, and supporting an intervention influences the success of the program (Chen, 2005). Descriptive assumptions are those made about the causal mechanisms through which interventions work to establish successful outcomes (Chen, 2005). Because patient outcomes were not part of the analysis, the change model is included for illustrative purposes only (Figure 2.2). The change model is comprised of the intervention (CP), determinants (socio-economic status of participants, health status, education, and level of social support), and outcomes (for women, for infants, and for families). The logic model for the project can be found in Appendix A. Each of the elements in the action and change models (Figure 2.2) are represented in the logic model in greater detail. It is important to examine how each of these elements is connected (or not), and to ascertain the most salient aspects of the model for future replication of statewide CP scale-up.

This process evaluation was both formative throughout years one and two of the three-year scale-up process, and summative at end of the second year. Reports and data were provided to stakeholders throughout the process to keep them apprised of what was happening so they had opportunities to use that information to improve implementation and scale-up. The resulting manuscripts (Chapters 4 and 5) serve as the summative intervention documentation and will be given to stakeholders.

38

3.2 Setting

In 2013, per the recommendation of statewide SC Birth Outcomes Initiative, SC DHHS invested in the expansion of CP to sites throughout the state as a strategy to improve birth outcomes and reduce racial disparities in birth outcomes in South Carolina. That such outcomes could be attained were shown in research conducted at Greenville Health System (Picklesimer et al., 2012) Expansion sites were selected through a competitive application process. Application procedures and selection of sites is described in detail in Chapter 2. Since 2013 CHI has trained people from seven health care settings throughout South Carolina to offer CP. CHI is a nonprofit organization that maintains the CP curriculum, provides training and technical assistance, and oversees site certification necessary to start and sustain CP.

This evaluation was conducted at five of the ten expansion sites that were selected during the first year of implementation (Spring 2013). These sites started conducting CP groups during the summer/fall of 2013. The sites in this study were AnMed Health Family Medicine in Anderson, SC; Tuomey Healthcare System Ob-Gyn in Sumter, SC; Carolina Ob-Gyn in Murrells Inlet and Georgetown, SC; University of South Carolina School of Medicine Department of Obstetrics and Gynecology in Columbia, SC; and Medical University of South Carolina Charleston, SC (Table 3.1). A map of the sites can be found in Appendix B.

Table 3.1 CenteringPregnancy Sites in South Carolina, 2008-2014

Site Name	Location	Year initiated CP	Inclusion in this process evaluation
Greenville Health System	Greenville	2008	No, not an expansion site
Mountainview OB-Gyn	Easley	2008	No, not an expansion site

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AnMed Health Family Medicine	Anderson	2013	Yes
Tuomey Healthcare System OB-Gyn	Sumter	2013	Yes
University of South Carolina School of Medicine Department of Obstetrics and Gynecology	Columbia	2013	Yes
Carolina OB-Gyn, Georgetown Hospital System	Murrells Inlet	2013	Yes
Medical University of South Carolina	Charleston	2013	Yes
Montgomery Center for Family Medicine	Greenwood	2014	No
Carolina Women's Center	Clinton	2014	No
Palmetto Women's Healthcare	Manning	2015	No
Lexington Women's Care	Lexington	2015	No
Costal Carolina OB-Gyn	Conway	2015	No

3.3 Sample

Staff at five GPNC sites in SC (Table 3.1) and staff and faculty from the Statewide Expansion-Coordinating site, Greenville Health System participated in this evaluation. Steering committees were convened at each of the GPNC sites and include at least one, sometimes more, of each position: healthcare practitioner who facilitates groups, group co-facilitator, clinic administrator, CP coordinator, marketing leader, recruitment leader, internal process evaluation and benchmarking leader, nursing and ancillary clinic staff. In some instances, the same person fulfilled more than one role. Additionally, some clinics included a patient on the steering committee. Ten facilitators and two expansion coordinators were interviewed. Steering committee groups of two to eight members at each site were interviewed. Two facilitators were observed at three

40

different sites for seven to nine sessions of one group at each site. Twenty-seven CHI trained facilitators at the five sites were invited to participate in two surveys.

Pregnant women who sought prenatal care at each of the five sites were given a choice to enroll into GPNC if they met inclusion criteria, upon screening by a healthcare provider at the intake visit: 0-4 months pregnant, singleton (not multiples) pregnancy, and were able to meet during designated group session times. The optimal group size for CP is 8-12 women for each 10-session group at each site (Centering Healthcare Institute, 2009a, 2009c). Women with both Medicaid and private insurance were to be enrolled in CP. Pregnant women enrolled in CP were not included as participants for this study.

3.4 Measures

The following indicators and measures were included in the analysis for each of the five sites, as shown in the process evaluation plan (Appendix C). These were pre-determined by the process evaluation team.

1) Complete and acceptable delivery based on the program theory and 13 essential elements, using the preset 70% implementation criterion (Appendix D). The 70% implementation criterion was set and was be determined by the team of expert evaluators based on Durlak and DuPre's (2008) arguing that expecting perfect implementation by sites is impractical because sites do not implement every potential element within interventions. Positive outcomes were seen in their analysis when sites met approximately 60% of the implementation criteria, and few sites in their study met 80% of the criteria.

a) Fidelity – intervention model is acceptably delivered and is consistent with the theories used to develop the intervention and all of its components (13 essential elements)

b) Completeness (dose) – individual session elements are addressed, activities are conducted, and the timing and duration of each group is complete

2) Reach – the number of women who participated in CP at each site

3) Context - the internal system elements at each site (infrastructure, organizational context, and participant determinants) and external contextual elements in each community (political/economic climate, financial support, community support, secular trends) that could have influenced GPNC implementation and scale-up, as well as how sites worked to overcome contextual challenges.

Participant email contacts were obtained through the Statewide Expansion Coordinator, as the process evaluation was one prerequisite for accepting implementation start-up funds and training. The methods and dates of data collection for the process evaluation are outlined in Table 3.2.

Table 3.2 Process Evaluation Sites and Data Sources for Scaling up Group Prenatal Care in South Carolina

Site Name	Location	Baseline Steering Committee Interview	1st Followup Steering Committee Interview	2nd Followup Steering Committee Interview	Individual Facilitator Interviews	Site Observations	Facilitators' Essential Elements/ Content Surveys	Other Observational Notes and Interviews
AnMed Health Family Medicine	Anderson	02/2013	12/2013	09/2014	1 in 10/2014, Unable to schedule a second	10 sessions observed for 1 group, Fall/Winter 2014	Essential Elements – 09/2014 Content – 12/2014	Observational notes during site visits
Tuomey Healthcare System Ob-Gyn	Sumter	02/2013	11/2013	10/2014	2 in 9/2014	7 sessions observed for 1 group, Spring/ Summer 2014	Essential Elements – 09/2014 Content – 12/2014	Observational notes during site visits
University of South Carolina School of Medicine Department of Ob-Gyn	Columbia	02/2013	09/2013	09/2014	2 in 9/2014	7 sessions observed for 1 group, Summer/Fall 2014	Essential Elements – 09/2014 Content – 12/2014	Observational notes during site visits
Carolina Ob-Gyn, Georgetown Hospital System	Murrells Inlet & Georgetown	02/2013	10/2013	09/2014	2 in 9/2014	n/a	Essential Elements – 09/2014 Content – 12/2014	Observational notes during site visits
Medical University of South	Charleston	02/2013	02/2014	July 2014	1 in October 2014	n/a	Essential Elements – 09/2014	Observational notes during site visits

Carolina						Unable to schedule a second		Content – 12/2014	
Greenville Health System	Greenville *Statewide Coordinator	-	-	-	-	-	-	Individual Interviews with 2 Coordinators: 10/2014
CHI Basic and Advanced Facilitation Trainings	Charleston, Greenville, & Columbia	-	-	-	-	-	-	Observational notes during expansion site trainings: 05/2013, 06/2013, 04/2014, and 05/2014
Consortium Meetings	Greenville, Columbia, & Charleston	-	-	-	-	-	-	Observational notes during 7 consortium meetings: 01/2014 – 11/2014
CHI National Conference	Washington, DC	-	-	-	-	-	-	Observational notes during national Conference: 10/2013
Birth Outcomes Initiative	Columbia, SC	-	-	-	-	-	-	Observational notes during monthly meetings: 2013-2014

3.5 Data Collection Procedures

Multiple quantitative and qualitative methods were used to document the implementation of GPNC at five clinical sites within separate healthcare systems, respectively, across South Carolina. A team of trained evaluators conducted individual and group semi-structured interviews, group observations, document review, and a media analysis, which are described in detail below. Interviews were recorded and transcribed by the evaluation team. Appendix C contains the data sources, tools, analysis procedures, and reporting for each part of the process evaluation that were used to fulfill the three specific aims.

From February 2013 through December 2014, 15 semi-structured group interviews were conducted with steering committees (Appendices E, F, and G) eight individual interviews were conducted with primary group facilitators (Appendix G), and four individual interviews were conducted with state expansion coordinators (Appendix G). GPNC facilitators, clinic administrators, other individuals on steering committees, and administrative staff from Greenville Health System participated in this process evaluation. Field notes were taken with each site visit and interview. Data were also gathered through note-taking and memos at: the National CP Conference in Washington, DC, Greenville Health System (Statewide Expansion Coordinating team) in Greenville, SC, Birth Outcomes Initiative meetings in Columbia, SC, CHI CP Facilitation Trainings in Columbia, SC and Charleston, SC, and SC CP consortium meetings held at sites across the state (Table 3.2).

Two separate surveys were conducted electronically with group facilitators at each of the five sites. These surveys were used to assess fidelity to CP essential elements

that were implemented (Appendix H) and completeness of educational content covered for each session (Appendix I). Methods from Dillman, Smyth and Christian (2014) were used for Internet survey administration. To collect the best survey estimates possible, a complete list of sample members – trained facilitators – was obtained from the Statewide Expansion Coordinator at GHS. Questions were written concisely using familiar language to facilitators from CP and from the 13 essential elements of CP listed by CHI. Instructions were placed at the beginning of the survey. Questions were asked one at a time with as few answer options as possible and with sufficient spaces between questions. Questions were numbered consecutively. Answer choices were listed vertically. Detailed instructions were provided on the welcome screen of each online survey, with brief instructions at the top of every page. Consistent page layouts were used throughout the surveys. Respondents were able to back up to previous pages. Surveys were tested on multiple devises prior to contacting participants.

Facilitators were first told during consortium meetings about the near-future opportunity to participate in the process evaluation through surveys. Then, they were contacted via email with personalized salutations. Within the email, there was a clear description of the surveys and their usefulness to the scale-up process. An invitation to complete the survey was provided in the email via a web link. The first survey on essential elements was sent electronically via email with follow-up reminders to facilitators who did not respond at about one week and three weeks after the initial invitation. Follow-up reminders varied in language from the initial invitation. The second survey on educational content was sent electronically with a reminder sent approximately one week after the initial invitation (Dillman, Smyth, & Christian, 2014). To triangulate

the data (King et al., 1987; Ulin, Robinson, & Tolley, 2005), observational checklists (Appendix J) were used at one site within a public hospital, one site at a university research hospital, and one site at a residency-training program. The first survey included questions about group facilitation and the essential elements of GPNC (Centering Healthcare Institute, 2009a). Of 27 invitations to complete the survey, 15 participants completed it fully (55.5%) and two participants completed it partially (7.4%). There were at least two principal facilitators who responded from each of the five sites. The second survey included questions regarding the educational content that facilitators cover during the ten sessions of GPNC. Of 27 invitations to complete the survey, 12 participants (44.4%) completed it fully. There were at least two principal site facilitators who responded from each of the five sites. Some of the facilitators who did not respond had never actually facilitated a group after being trained, according to information obtained at consortium meetings and group interviews.

Additionally, a qualitative media analysis of content in newspapers, blogs, news websites, press releases, and television sources was conducted to capture contextual themes around scaling up GPNC in South Carolina and to explore meanings of external influences on scale-up efforts (Altheide & Schneider, 2013). The purpose of the media analysis was to obtain information about opinions of GPNC, perspectives on and approaches to implementing and scaling up GPNC, contextual elements associated with these processes, as well as strategies, settings, policies and structures related to scaling up GPNC in South Carolina. Media analysis was conducted using LexisNexis and a Google search. Local and national passages published January 2013 – November 2014 were included that referenced: CenteringPregnancy, or Centering Pregnancy; birth outcomes

and infant mortality in SC; SC Birth Outcomes Initiative or Birth Outcomes Initiative; baby-friendly or baby friendly in SC. These search terms resulted in 69 unique references. Of these, 49 were sampled and analyzed for their theoretical association with external or system-level contextual elements that could impact GPNC expansion or because they were specifically about one of the CP expansion sites in South Carolina (Altheide & Schneider, 2013).

3.5 Data Analysis

I conducted data analysis for each of the various types of data. Interviews were audio recorded and transcribed by the interview team. Interviews, observations, documents, media, meeting records, and survey qualitative data were systematically coded using NVivo 10 (QSR International, 2014). Analysis of codes was ongoing and inductive to modify interviews and tools as needed. Three types of coding were used during the initial, line-by-line coding process. First, 64 *theoretical codes* (Maxwell, 2005) were developed *a priori* from the conceptual models and process evaluation plan (Saunders et al., 2005). The *a priori* list was not comprehensive, so 42 *emergent-etic codes* were added to reflect topics that emerged from the data but were coded with research team concepts, and 29 *emic codes* were used to reflect participant's beliefs and concepts (Maxwell, 2005). To develop a deep understanding of the scale-up process, it was important to code interviews initially using these three types of codes because provided a way to reflect on which codes represented the research team's concepts and were relevant (or not) to the process, which codes emerged from the data as being most salient for implementation and scale-up, and which concepts were best represented by participants' own words.

After initial coding, the three types of codes were organized into 17 subthemes by moving codes that were related into groups, some of which were substantive and some theoretical (Maxwell, 2005). Some codes were placed into more than one subtheme if they were related. I went back to the conceptual model throughout the process and compared it to my subthemes to help organize the subthemes into seven themes and to eventually revise the conceptual model based on the themes that emerged from the data (Maxwell, 2005).

Memos were created throughout the process for research design, literature review, research relationships, personal reactions, and during coding as themes emerged (Maxwell, 2005). Coding was cross-checked with other evaluation team members and themes were verified with key informants (i.e., Greenville Health System staff members) to confirm the interpretation of findings (Patton, 2002; Ulin et al., 2005). Data were triangulated through multiple tools and procedures, such as qualitative and quantitative methods, surveys, interviews, media analysis, and document review (Appendix B), to enhanced rigor, validity, credibility, and dependability (King et al., 1987; Ulin et al., 2005). Microsoft® Excel for Mac (2011) was used to analyze quantitative data from the online surveys. Implementation scores were calculated by averaging scores on the essential elements (Appendix G), educational content surveys (Appendix H), as well as the observational checklist (for sites that were observed) (Appendix I).

3.6 Protecting Human Subjects

This research was reviewed and approved through the University of South Carolina Institutional Review Board (Appendix K). Participants were not remunerated for their participation. Individual and group interviews were conducted in private. Study

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documents, transcripts, and audio recordings were kept on password-protected computers or locked file boxes in locked offices and used only for research purposes. Names of sites are presented in this dissertation and in reports and documents to SC DHHS and Greenville Health System for formative process evaluation purposes; names of sites will be kept confidential in submitted manuscripts by presenting site data with randomized site numbers. Individual's names are not included in any documents in order to protect the confidentiality of participants. Benefits to participants were shared resources and information among sites and between sites and the statewide coordinator team as requested by participants, constant feedback from the evaluation team, and two process evaluation reports.

CHAPTER 4: RESULTS

4.1 Essential Strategies, Social Processes, and Contexts of Early Phases of

Implementation and Statewide Scale-up of Group Prenatal Care in South Carolina

Abstract

Objectives: Both intervention implementation and intervention scale-up occur within multifaceted social and political settings and structures, using diverse strategies. Understanding how the processes involved in initiating intervention scale-up of piloted interventions may improve effectiveness and efficiency of future expansion efforts. This research examined an interagency collaborative in South Carolina that expanded group prenatal care (CenteringPregnancy) from two to five obstetrical practices across the state during the early phase scale-up. This mixed-methods process evaluation focused on identifying highlighted external contexts that may have influenced the early phases of implementation and scaling up of GPNC. The evaluation also described the importance of windows of opportunity and stakeholder values common to both implementation and scale-up, examined key processes and components of the start-up phase of scale-up and how contexts within the scale-up system influenced start-up, and delineated essential processes, strategies, and contextual elements of GPNC pre-implementation.

Methods: Data collection procedures included: 29 individual and group interviews with key stakeholders, three site observations of six to nine group prenatal care sessions with women, two surveys of group facilitators across sites, review of policies, meeting notes, and conference proceedings, and a media analysis of national and local CenteringPregnancy coverage in newspapers, blogs, news websites, and press releases published from January 2013 – November 2014.

Results: Implementers capitalized on windows of opportunity at both the site level during implementation and the state level during scale-up throughout these

52

processes. Key decisions and actions at state and local levels occurred in ways that were consistent with stakeholder values. At the state level, strategic use of research demonstrating that CenteringPregnancy improved birth outcomes as well as reduced racial disparities in outcomes, leveraged financial and political commitment to expanding statewide access to group prenatal care, especially among women enrolled in Medicaid. Site-level decision-makers applied for and received state funding for CenteringPregnancy start-up and certification, created mechanisms to foster staff commitment, and participated in a state-wide Consortium that facilitated communication and lessons learned among sites.

Discussion: Motives, decisions, and actions of stakeholders reflected their specific values (e.g., wellbeing, knowledge, and power). Creation and use of opportunity windows that allow stakeholders to pursue actions consistent with values is important to the early phases of intervention implementation and scale-up. Advancing these processes across complex health systems takes strong political advocacy and support, interdisciplinary collaborations, and funding.

Introduction

Despite evidence-based solutions for health problems, including advances in healthcare delivery, but the slow adoption, of these solutions has led, in part, to missed opportunities for addressing some of the most daunting health problems in the United States and globally (Glasgow et al., 2012; Hartmann & Linn, 2008; McCannon et al., 2007; United Nations, 2013b; United States Department of Health and Human Services,

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2010; World Health Organization, 2010). In the US, maternal and child health problems in the United States have been especially challenging to address.

The *Final Review* on US Healthy People 2010 indicated 39 of 42 Maternal, Child, and Infant objectives had not been met, including reducing infant and maternal deaths and increasing the proportion of women accessing first trimester and adequate prenatal care. Moreover, from 1998 to 2007 the rates of low birth weight and preterm infants had significantly *increased* from 7.6% to 8.2% and 11.6% to 12.7%, respectively (National Center for Health Statistics, 2012). Racial and ethnic health disparities remained in 33 objectives, and worsened in many of the objectives for non-Hispanic Black women (National Center for Health Statistics, 2012). Research supports scaling up evidence-based health interventions to address maternal and child health problems (McCannon, Berwick, & Massoud, 2007; United Nations, 2013a).

There is a growing body of research that associates CP with improved birth outcomes and reduced rates of racial disparities in preterm birth throughout the US (Grady & Bloom, 2004; J. Ickovics et al., 2007; J. R. Ickovics et al., 2003), and in South Carolina (Picklesimer, Billings, Hale, Blackhurst, & Covington-Kolb, 2012). When compared to traditional delivery of prenatal care, CP also has been associated with increases in pregnant women's knowledge about pregnancy (Baldwin, 2006), patient satisfaction (Ickovicks et al., 2007), post-partum family planning (Hale et al., 2014), psychosocial outcomes (Heberlein et al., 2015), and higher initiation of breastfeeding (Tanner-Smith et al., 2013). CenteringPregnancy involves prenatal care and education primarily in a group setting, incorporating three key components: healthcare checkups by a licensed healthcare provider along with patient self-care activities; facilitative (not

didactic) education through group discussions; and a supportive environment to women through group interaction (Centering Healthcare Institute, 2009c).

In 2008, Greenville Health System (GHS) began to offer CP prenatal care as one way to improve patient care. The demonstrated success of this piloted intervention in terms of improved birth outcomes (Picklesimer, Billings, Hale, Blackhurst, & Covington-Kolb, 2012), subsequently influenced the decision of the Director of South Carolina Department of Health and Human Services (SC DHHS) to fund scale-up of CP to other hospitals and practices throughout the state. Both process and outcome evaluations have been conducted throughout the scale-up of CP from two to twelve practices (2012-2015). In this paper, findings from the process evaluation elucidate the dynamics of CP scale-up throughout South Carolina. They also build a strong understanding of key elements needed for the start-up of CP as standard practice prenatal care throughout the state, especially those primarily serving women who access Medicaid as their main source of healthcare payment.

Scaling up: Definition and Components

The term *scaling up* has multiple meanings depending on the discipline (Cooley & Kohl, 2006), project, and context. The World Health Organization (2007) definition guided this process evaluation: "efforts to increase the impact of innovations successfully tested in pilot or experimental projects so as to benefit more people and to foster policy and programme development on a lasting basis" (p. i).

Analyzing the pathways to scale-up using a complex adaptive system (de Savigny & Adam, 2009) perspective has rarely been done in the health sector. Nevertheless, this approach has the potential to provide rich insights into why change occurs, as well as

how effective health interventions are moved to scale within real-world contexts across different health systems (de Savigny & Adam, 2009; Fixsen, et al., 2005; Glasgow et al., 2012; King, et al., 1987; Paina & Peters, 2012; Simmons et al., 2007). Intervention implementation within existing healthcare systems is challenging because of numerous contextual elements, as well as complexities within these systems that must be navigated (Chen, 2005; de Savigny & Adam, 2009; Fixsen et al., 2005). Environments, resources, plans, system structures, and policies related to healthcare systems are multifaceted, with multiple levels exist within these structures (Simmons et al., p. 90). Stakeholders within healthcare systems are diverse and have nuanced interactions with one another (Paina & Peters, 2012) as well as personal values that are reflected in the decisions they make (Clark, 2002) within healthcare systems. Additionally, systems adapt and react to changes as a result of implementing a new intervention; actors within organizations learn from changes (Paina & Peters, 2012).

Contextual elements that impact intervention implementation and scale-up are both internal and external to the intervention itself. In order to better understand how to best implement new interventions in existing systems, characteristics of the individual systems adopting the intervention should be monitored (Simmons et al., 2007). During the scale-up process, financial support, communication, as well as training and technical assistance have been shown to drive scale-up success. In addition to internal scale-up and system-level contexts, external funding, political climate, and community commitment can shape implementation and scale-up processes (Chen, 2005; de Savigny & Adam, 2009; Fixsen et al., 2005; Gillepsie et al., 2013; Simmons et al., 2007).

In public health policy-setting, as with any social process, there are participants (from individuals to organizations), perspectives (identifications, demands, and expectations), values, situations, strategies, outcomes, and effects (Clark, 2002). Setting policy agendas for intervention scale-up can be done most successfully within windows of opportunity (Simmons et al., 2007) that are influenced by context. These windows are only open for limited periods of time because they occur when problems and solutions are connected during times when politics are favorable (Kingdon, 1995; Simmons et al., 2007) or because they have been intentionally created (Lapping, 2012). All interactions between people, including those during windows of opportunity, involve navigating and transferring personal values that they want to maximize (Lasswell, 1971). These values are defined as situations and things people "desire, aim at, wish for, or demand" (Clark, 2002, p. 25) using intentional strategies (Lasswell, 1971). Strategies, therefore, are techniques that people use to manage their values (Lasswell, 1971). The relationships created, and decisions made within them, reflect stakeholder values, which can enhance or deter intervention implementation and scale-up (Atun et al., 2010; Azzam, 2010).

Among the multiple frameworks for scaling up health interventions, (Cooley & Kohl, 2006; Simmons et al., 2007; Subramanian et al., 2011; World Health Organization, 2011), few describe how key decisions are made and collaborations are navigated in ways that align with well-defined stakeholder values. Furthermore, although there is evidence of the correlation between CP and positive outcomes for women and babies, there is a paucity of information about how to best implement GPNC within existing, complex health systems so that such outcomes can be reached and maintained (Hackley et al., 2009; Klima et al., 2009; Novick et al., 2013; Tanner-Smith, et al., 2013). To date, there

57

is no existing framework for operationalizing simultaneous site implementation and multi-site scale-up of GPNC to the state or national level.

Study Aims

The purpose of this mixed-methods process evaluation was to assess the essential strategies and social processes that occurred during early phases of a coordinated GPNC scale-up at the state level in South Carolina and concurrently, GPNC implementation at five sites within their respective healthcare systems or organizations from 2013 to 2015. Specific aims were to describe: 1) how external contextual elements may have influenced implementation and scaling up GPNC, 2) the importance of windows of opportunity and stakeholder values common to both implementation and scale-up, 3) essential processes, strategies, and contextual elements of the first phase of implementation (i.e., pre-implementation), and 4) key processes and components of the start-up phase of scale-up and how contexts within the scale-up system influenced start-up. To date, this is the only process evaluation of GPNC scale-up, and no other study has delineated the early phases of implementation and scale-up as they co-occur and are influenced by context, windows of opportunity, and stakeholder values during a statewide health intervention scale-up endeavor.

Methods

The conceptual model for GPNC scale-up (Figure 4.1) was based on models and concepts from Billings et al. (2007) and de Savigny and Adam (2009). The three phases of scale-up – start-up, expansion, and institutionalization – described by Billings et al. in their study on post-abortion care scale-up in Bolivia and Mexico guided data analysis for this process evaluation. Due to the complexity of health systems, processes contributing

to scale-up were expected to influence and be influenced by the internal contexts of individual health systems, as well as the external systems within the state that contributed to scale-up (de Savigny & Adam, 2009; Gillepsie et al. 2013).

In addition to the three phases of GPNC scale-up that occurred (Billings et al. 2007), there were three concurrent phases of implementation (i.e., pre-implementation, implementation, and incorporation) that emerged at the individual site level (Figure 4.1). These phases are similar to those found in Fixsen et al. (2005). Site implementation and state-level scale-up were influenced by external contextual elements (de Savigny & Adam, 2009; Billings et al., 2007; Fixsen et al. 2005). Stakeholders made use of and created windows of opportunity at the individual health system level and at the statewide scale-up level (Kingdon, 1995; Lapping, 2012). Additionally, motives, decisions, and actions of stakeholders were reflections of their values (Clark, 2002) (Figure 4.1). Each aspect of these social processes, contextual elements, and their interactions are described in detail below.

Participants included clinic and hospital staff at five GPNC sites in South Carolina, Statewide CP Expansion Coordinators, staff from SC DHHS, staff from the Centering Healthcare Institute (CHI), and attendees at South Carolina Birth Outcomes Initiative (BOI) meetings, where multi-disciplinary representatives from across the state met to discuss strategies to improve birth outcomes in South Carolina. As part of initiating GPNC, a steering committee was convened at each of the five sites. Members of steering committees were included as evaluation participants. Steering committees were comprised of at least one, sometimes more, of each position: healthcare practitioner who facilitates groups, group co-facilitator, clinic administrator, CP coordinator,

59

marketing leader, recruitment leader, internal process evaluation and benchmarking leader, nursing and ancillary clinic staff. In many instances, the same person fulfilled more than one role.

To assess the implementation process at the organizational levels at each site, as well as the scaling up process at the state level, we conducted 15 semi-structured group interviews with steering committees of 2 to 8 members each, 8 individual interviews with primary group facilitators across five sites, and 4 individual interviews with two Statewide Expansion Coordinators.

We also conducted on-site observations of 2 facilitators at three diverse sites (i.e., one public hospital site, one university research hospital site, and one residency-training program site). We observed 7 to 9 sessions of one group at each CP site. A qualitative media analysis of content in newspapers, blogs, news websites, press releases, and television sources published from January 2013 – November 2014 was conducted to capture contextual themes focused on scaling up GPNC in South Carolina and to explore meanings of external influences on scale-up efforts (Altheide & Schneider, 2013). We invited 27 CHI trained facilitators at the five sites to participate in two online surveys. We followed the internet survey administration recommendations delineated by Dillman, Smyth and Christian (2014). These included: providing detailed instructions on the welcome screen of each online survey, brief instructions at the top of every page, and consistent page layouts were used throughout the surveys. Furthermore, we wrote questions concisely and numbered them consecutively. We asked questions one at a time using as few answer options as possible, and used familiar language to participants from the 13 essential elements of CP outlined by CHI (2009a). Respondents were able to

return to previous pages. Prior to contacting participants and administering surveys, we pre-tested them on multiple devises. The first survey was used to measure group facilitation and the essential elements of GPNC (Centering Healthcare Institute, 2009a).The second survey was used to measure the educational content that facilitators covered during the ten sessions of GPNC. Data also were gathered through note-taking and memos at a national Centering Healthcare Institute Conference and statewide meetings through the South Carolina Birth Outcomes Initiative and South Carolina CP Consortium.

I systematically coded interviews, observations, documents, media, meeting records, and qualitative survey data using NVivo 10 (QSR International, 2014). Analysis of codes that emerged from these data sources was ongoing and inductive to modify interviews and tools as needed. Coding was cross-checked with other evaluation team members and the themes that emerged from the codes were verified with key informants (i.e., Statewide Expansion Coordinators) to confirm the interpretation of findings (Patton, 2002; Ulin et al., 2005). Data were triangulated through multiple tools (i.e., interviews, surveys, observations, and media) and mixed-methods procedures for enhanced rigor, validity, credibility, and dependability (King et al., 1987; Ulin et al., 2005). The methods for this process evaluation were reviewed and approved through the University of South Carolina Institutional Review Board.
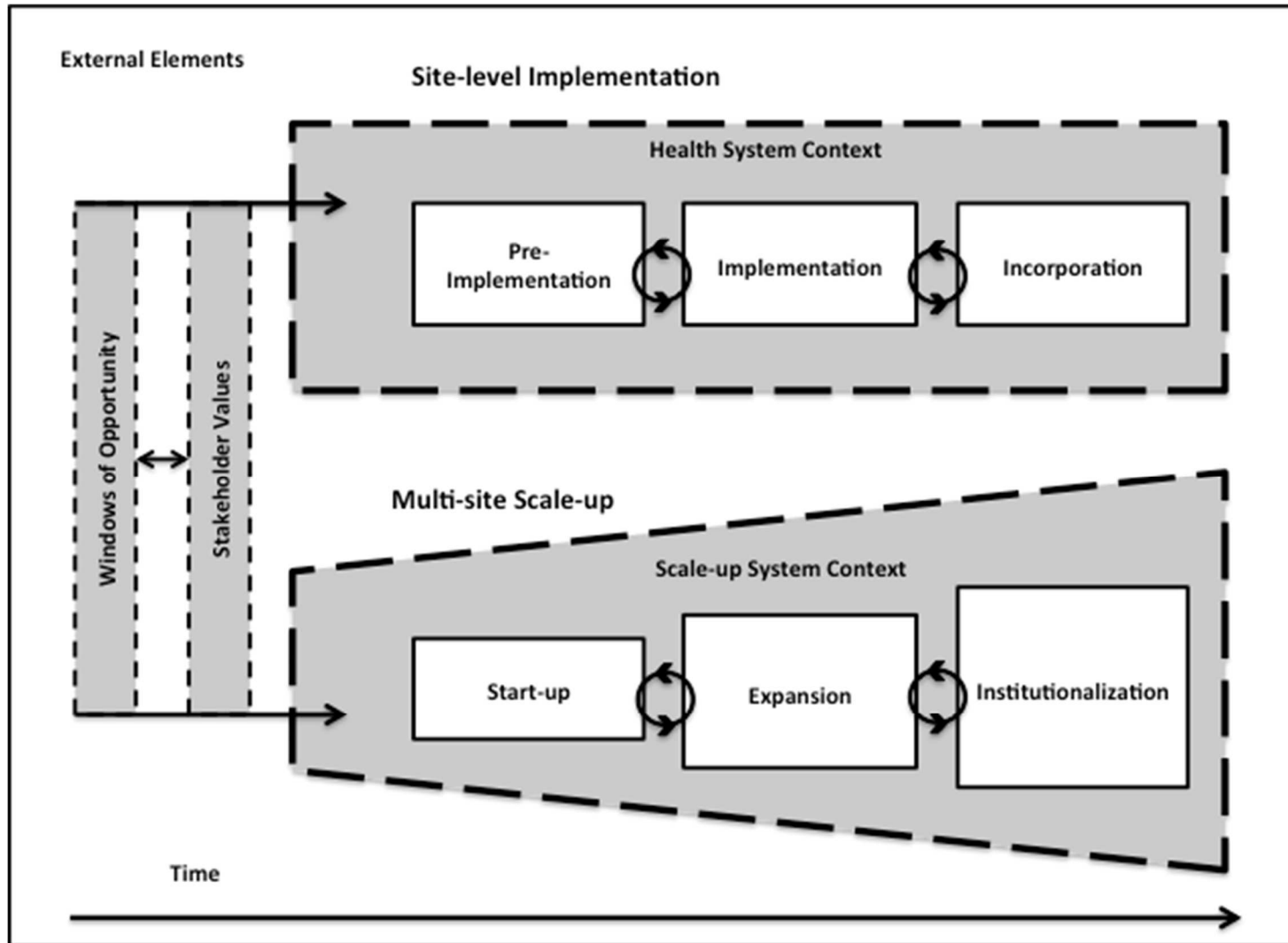
Figure 4.1. Framework for Implementing and Scaling up Group Prenatal Care across Existing Complex Health Systems

An important part of this prospective process evaluation involved building professional relationships and trust between evaluators and stakeholders. The intentions of the evaluation team were to provide formative feedback to state and site leaders regarding the process with the goal that people could use the information to enhance the success of the process. As a result of these relationships, important information was shared during interactions at sites, but not during formal data-gathering procedures. State and site leaders agreed that this information could be shared among stakeholders.

Results

Survey Responses

Of 27 invitations to complete the essential elements survey, 15 participants completed it fully (55.5%) and two participants completed it partially (7.4%). Of 27 invitations to complete the educational content survey, 12 participants (44.4%) completed it fully. There were at least two principal site facilitators who responded from each of the five sites to both surveys. Some of the facilitators who did not respond had never actually facilitated a group after being trained, according to information obtained at consortium meetings and group interviews.

Setting and External Contexts for GPNC Implementation and Scale-up

Through this process evaluation, we described external contexts that had a direct impact on CP implementation at the organization level and scale-up at the state level. These included conditions of the *local economy* and level of *political* and *community support* regarding prenatal care and maternal and child health. Favorable economic conditions and political environment in South Carolina allowed the Director of SC DHHS to redesign the state healthcare reimbursement system to include GPNC, with the goals of

improving birth outcomes and potentially cutting NICU-admission costs to South Carolina Medicaid. The SC DHHS Director at the time was interviewed for a news release by March of Dimes (2013) just after the first five sites were selected to implement CP. The Director reported the Birth Outcomes Initiative was, "aggressively addressing our state's epidemic of low birth weight babies by implementing research-based programs such as the Patient Centering Initiative" (Petty, 2013). In addition to scaling up GPNC to the state level, BOI supported repayment reform in an effort to decrease elective Cesarean sections to "save babies, save money," according to the BOI Deputy Director (Petty, 2013). Discussions across the state supported reducing the cost of Medicaid:

> South Carolina's budget at the time [in 2011] was in a financial meltdown as it faced a faced a $228 million budget deficit and the state needed to cut $30 million from its Medicaid budget...In 2009, Medicaid became the largest line item in South Carolina's budget…Medicaid accounted for $5.9 billion in total state expenditures, or 27 percent of the overall $21.5 billion total state budget in 2011 (Petty, 2013).

State-level support of birth outcomes and reducing health disparities in South Carolina was evidenced through monthly presentations and discussions about the expansion project at state BOI meetings. Additionally, news coverage on preterm birth, infant mortality, and racial disparities in birth outcomes in South Carolina (South Carolina Department of Health and Environmental Control, 2014), creating baby-friendly hospitals (South Carolina Department of Health and Human Services, 2013), and the

benefits of CP in South Carolina (Holleman, 2014; Reynolds, 2014) may have positively influenced the level of community support for CP. There was also national news coverage of widespread CP implementation in Ohio (Anspach, 2014), Georgia (Parks, 2013), and Washington, DC (Reed, 2013) revealing a national movement (Rosenberg, 2013) towards providing GPNC to pregnant women as standard care.

Windows of Opportunity and Political Commitment for GPNC Implementation and Scale-up

At the organizational site level, clinic decision-makers capitalized on windows of opportunity by arranging meetings, attending grant application forums, applying for funding and support to implement the new model of care, and building staff commitment at their own sites as they adopted GPNC, "Because I was able to meet with her [Statewide Expansion Coordinator] through the [South Carolina Perinatal Association] meetings, she knew that I was interested. I had seen her at Birth Outcomes Initiative and the Vision Team, and then we had dinner together and talked about it…I feel like we've got a team that we can be successful with. So that's the main interest for us" (clinic administrator).

Other opportunities for garnering support occurred during the statewide GPNC scale-up process at the state level. These opportunities included the identification of poor birth outcomes as a problem and opportunities to inform state and health insurance leaders of South Carolina the state-specific evidence of GPNC benefits to patients (Picklesimer et al. 2012). Key stakeholders took advantage of these windows of opportunity to secure funding to implement and oversee the new model of healthcare at multiple sites throughout the state. The DHHS Director was interested in funding scaling

up CP as a way to reduce NICU stays and improve perinatal outcomes. The Statewide Expansion Coordinator explained, "At that the same time…sustainability was really important and we would have to have some incentive payments. So that first year, he [wrote] incentive payments into the contracts with the managed care organizations." Advocates at the state level also planned for ways to sustain CP if windows of opportunity closed, especially if there were changes in SC DHHS administration or financing, which happened in 2015, or if leaders felt that the problem of poor birth outcomes and disparities in birth outcomes had been addressed by other means.

Stakeholder Values during Implementation and Scale-up

Our analysis of the scale up process indicated that the motives, decisions, and actions of stakeholders reflected their values and what they were trying to achieve. These values were especially evident in stakeholder discussions of capitalizing on or averting windows of opportunity. The eight values defined by Clark (2002) (i.e., power, enlightenment, wealth, well-being, skill, affection, respect, and rectitude) were used with adaptations that better fit the context of the healthcare system to interpret findings.

The values stakeholders described below are listed in the order of most to least conveyed in interviews by stakeholders. Leaders at sites stated the model would allow women a greater level of *rapport*, or relationships: "to form bonds and connect with other people in the community so that if they didn't have those support systems before, those can be in place" (steering committee member). Healthcare providers continued to promote GPNC in their practices, "as a facilitator, I really get to know the women a lot better in the group than I did one on one, but it is more emotionally intense" (group facilitator). Clinic staff often described the value of *well-being* when deciding to

66

implement CP because they believed the model would offer a better type of healthcare with better health outcomes: "So a different approach which would have better outcomes and much better compliance" (steering committee member). They also valued the *knowledge*, or educational aspect of CP for patients: "I feel it is very important that pregnant women get comprehensive care in a manner that they can understand and relate to, that is going to help them understand the whole process that they're going through" (nurse midwife group facilitator). Administrators believed that the residency education programs benefit from the model: "From a residency educator perspective, this is to me, a really exciting opportunity to shake the educational boat just a little bit" (residency program steering committee member). Providers were eager to develop and practice their *skills* as facilitators in care, "When I came out of [training], I thought, 'Oh, I'd love to do that.' …It would be so much fun for me as a nurse midwife, to do this" (group facilitator).

Administrators expressed valuing *power:* "I wanted to start it here because I thought we had the best chance for success here, in our own office where we had more control over the staff and the surroundings" (clinic administrator). Providers also expressed valuing power during the implementation process: "the private practice physicians are reluctant to "give up" their patients to a Centering group." Wealth was sometimes cited as a value that reflected providers' ambivalence towards CP: "There is one provider who is just not sure whether or not it will make money for the practice. The provider isn't against it, but is not completely sold, until the person sees that there is money coming in" (steering committee member). Valuing *conformity* was revealed through the expectation that there would be better compliance by patients, "if they really

67

are committed to being a part of the group, then that's part of that commitment too, showing up and then participating when they're here" (steering committee member). Steering committee members also expressed a deeper level of *respect* for patients as they prepared to implement the model:

I think it just will promote those ladies to give them something to look forward to in pregnancy, to normalize it, to empower them, to make them feel that they're a part of something, that they are relevant in a situation that they actually have some say-so in it (steering committee member).

Stakeholders made decisions to create and make use of windows of opportunity throughout the implementation and scale-up processes, and these decisions aligned with their values. They succeeded in initiating GPNC in multiple clinics throughout the state with support from state and local leaders who valued goals of improving birth outcomes and reducing racial disparities in birth outcomes. Better birth outcomes and lesser disparities would be accompanied by lower costs to the state; therefore, funding was made available through SC DHHS to expand GPNC. The level of financial support (discussed in detail below) was essential to the success of moving GPNC to scale at the state level and defined the parameters in which scale-up happened by primarily targeting implementation sites that provided services to pregnant women with Medicaid.

Processes, Strategies, and Contextual Elements of Group Prenatal Care Pre-Implementation

The processes, strategies, and contextual elements at the health system level that primarily influenced CP implementation were: 1) support from key stakeholders their

expectations of CP, 2) organizational collaboration and steering committees, 3) perceived practice needs, 4) practice type and geographic location, 5) the socioeconomic characteristics of the patient population, and 6) provider characteristics. These processes, strategies, and contextual elements are discussed in detail below. Using a systems perspective for this evaluation allowed a deeper understanding of the underlying characteristics of the complex existing health systems in which GPNC was implemented systems (de Savigny & Adam, 2009; Paina & Peters, 2012). Interactions and feedback loops among contextual elements were explicit in the pre-implementation phase at the health-system level. Implementing an intervention into these health systems influenced the relationships among sub-systems outlined in de Savigny and Adam (2009), such as the GPNC health service, health system employees, dissemination of information related to GPNC, technology and electronic medical record systems, financing, leadership both within the clinic system at all five sites and at the larger hospital system at four of the five sites, and stakeholders. These sub-systems adapted as a result of this change, leading to effects in the broader system. For example, hospital-based leadership support allowed for extensive community CP marketing at one practice, while another practice experience pushback and was limited to marketing within the practice. Some practices found it challenging to plan for ways in which electronic medical records could be used for group care, while other clinic administrators used previous relationships with their information services department to have a group care template created.

Support from key stakeholders within each of the five individual practice sites, such as administrators, clinic staff, and direct health care providers, was a process that contributed to successful implementation of CP. Changing the way care was provided

69

within these existing healthcare systems was a difficult process to achieve. Some leaders within these practices established a top-down decision-making strategy that enabled administrators to use their authority to bring CP to the practice. Physicians who supported bringing CP to their practice also used their status in the process of persuading skeptical administrators and staff to support CP implementation. Many administrators were anxious, yet excited to implement CP into their practices, "I'm excited. I know there's going to be some change, nobody really loves change, but I think that overall it's great and I'm excited about it. I'll just feel more comfortable once I've been doing it for a while" (group facilitator). At least one administrator at each site who could oversee the process was essential.

While many stakeholders initially supported CP, effort was necessary to overcome resistance among hesitant or uncertain people within each practice both prior to implementation and as practices began to implement CP, "Early on if people weren't excited about it was just because they didn't know what it was, or they didn't understand it, and the more we get into it, the more we explain, the more inertia it gets" (steering committee member). Throughout implementation, stakeholders at each of the practices were actively engaging and reaching out to providers, staff and administrators to build support for CP, though some providers remained ambivalent, "Usually the people not supportive of Centering are the people who are not involved. They don't like the idea, don't understand the idea, or aren't able to be involved and are disgruntled" (Facilitator, hospital-based CP practice).

Within individual health systems, stakeholders had expectations of CP that influenced their decisions to bring it into their practices. Some stakeholders believed that

the CP model related closely to their baby-friendly hospital status. Often, stakeholders wanted to change the way obstetrical care was provided. They believed CP was a different way to provide care that would result in better health, educational, and support outcomes for pregnant women, as well as higher patient satisfaction and stronger relationships between women and their providers:

> I think for me it's a completely different way of thinking about how to deliver prenatal care from the traditional way it's been delivered in the past. So a different approach which would have better outcomes and much better compliance with the women who are pregnant to take care of themselves" (steering committee member).

> I think it's an excellent opportunity to create community around pregnancy, and it's an educational opportunity for the patients who can then share experience, feeling that they can commiserate as well as ask questions (steering committee member).

Stakeholders at some sites thought CP would be more patient-centered than traditional care, "meeting them where they are and letting them direct what avenue they want to pursue as far as education, questions and that kind of things" (steering committee member).

Some stakeholders involved people from various disciplines with multiple perspectives and areas of expertise through *organizational collaboration*. At the recommendation from CHI, steering committees at each of the CP sites were convened and included the following staff who volunteered to participate: group facilitators, other

healthcare practitioners, center director, clinic coordinator, other clinic administration, marketing leader, internal process evaluation and benchmarking leader, support staff, and patients. Steering committees strategically brought together politically influential people from both within their clinic and externally associated with it to address challenges and concerns, brainstorm solutions, share ideas, and make plans for the future of CP at their site. These meetings also created a space where critical buy-in happened. Steering committees met regularly, typically monthly, during the first year of implementation and less frequently during the second and third years. One challenge that most sites faced was scheduling these meetings because of the competing demands of "running a practice and caring for patients" (clinic manager).

At practices with a cooperative staff, stakeholders described how teamwork made challenging tasks more manageable. A large number of varying roles were necessary to make CP work, from healthcare providers to administrators and ancillary staff. Teamwork helped with scheduling, patient flow, recruitment and marketing, and group facilitation, "They think that they are all working together and making it work" (clinic administrator). Another leader described how staff makes CP work, "They constantly exchange ideas during clinic. It's been a good team effort…they are wonderful. They want it to work and want it to be successful" (steering committee member).

As stakeholders navigated the pre-implementation phase they addressed *perceived needs* about implementing CP. For example, steering committee members at individual sites anticipated needing to change to the way they kept electronic medical records for group care versus individual care but initially were unsure of how to streamline these changes. The planning process also involved organizing refreshments, which is an

essential element outlined by CHI for CP, as well as what to provide and how to pay refreshments. They also spent a great deal of time and energy learning how to finance GPNC within their practices, including how to submit appropriate billing codes. Steering committee members and clinic staff had to consider changes in patient-flow, changes in provider and staff time, and their roles, how to market their new GPNC model, and how to set up a physical space that would be large enough to accommodate up to 24 women and their support people, as well as two group facilitators. Noting the range of anticipated changes to clinic policies and procedures, one steering committee member said, "It's really going to be a whole revamping of what we do right now" (steering committee member).

Common questions that arose during the pre-implementation phase focused on logistics ranging from providing snacks to electronic medical records, health check-ups in the group setting, data collection and reporting, and the patient enrollment process. The CHI training and individual practice CHI System Redesign meetings addressed these issues. A faculty member from CHI visited each site and guided them through common changes to their practices to make CP successful. Steering committee members and group facilitators and co-facilitators were eager to attend the CHI two-day Basic Facilitation Training so they would have a better idea of what they would need to accomplish before they enrolled their first patients into group care. Some steering committee members anticipated that educating all of the clinic staff would be challenging:

> I think the hardest part's going to be is to educate everybody that's in our practice
> so that if a patient comes in that would be perfect for Centering, that when they
> see the provider, the provider happily gives that patient over to the Centering

73

program, instead of keeping them in their own practice with their own patients (steering committee member).

Practice type and geographic location also influenced decisions and strategies during the pre-implementation process. Some differences related to decision-making structures, given that some clinics were independently run and others were overseen by a hospital system. There were also differences in recruitment and enrollment for patients between the family practice clinic and the other four OB/GYN clinics, as well as for clinics in large urban areas compared to those in smaller cities and towns. Incorporation of residents into CP facilitation and changes to residency educational models were important factors for residency training programs that were not relevant to sites that did not have residents. Leaders at three practices wanted an educational alternative for their residents, "I wanted to start because I knew it was good for patients, and I felt like it would be something that we could incorporate into the education of medical students and residents in a positive way" (clinic director). A common belief among steering committee members was that CP would bring more clients to their practice:

> And I actually agree that once we have a successful group, they're going to tell
> their friends, and it's going to prompt people to come here for OB care, and it's
> going to be self-perpetuating. That's what I'm hoping that it will be" (steering
> committee member).

The socioeconomic *characteristics of the patient population* at each site influenced the way stakeholders planned to recruit and enroll patients into CP. As a

stipulation of receiving SC DHHS start-up funds, practices were expected to primarily enroll Medicaid-eligible women. Leaders at one clinic anticipated challenges in scheduling CP groups during times when women who lacked transportation or worked shift-jobs could attend.

Provider characteristics, in particular their willingness to engage in more facilitative way to provide care also influenced the pre-implementation process. Licensed practitioners (i.e., physicians, nurse practitioners or nurse midwives) at each CP site were designated as GPNC facilitators and nurses or support staff members at each site were designated as co-facilitators. There was a lot of uncertainty about the kinds of information, supplies, and support that practices would need, "One of the problems is that we don't know enough. At least, I'm speaking for my own self, I'm not immediately aware of a specific problem. It's not through lack of our policies, it's lack of understanding what [CP] oftentimes looks like" (steering committee member). Additionally, characteristics of providers not chosen to participate in CP sometimes influenced how CP was initially received, "Where we may struggle is our faculty [physicians] who are set in their ways. Change is hard for all of us, but those providers who provide obstetrics who fit those criteria are a very small group" (CP coordinator).

Start-up Phase of GPNC Scale-up

The start-up phase of GPNC scale-up involved the introduction of CP, an innovative model of prenatal care, into five established healthcare sites through the use and creation of windows of opportunity and key decisions and actions at state and local levels that consistent with stakeholder values as previously described, as well as: 1) community-based and government collaborations and 2) key system-level contextual

elements including financial resources, clear and effective communication, and training and technical assistance.

Community-based and government collaborations were built, and key resources for CP were assembled. The United States Department of Health and Human Services began the Strong Start initiative to reduce preterm birth rates, as well as improve birth outcomes for infants and health outcomes for pregnant women (Centers for Medicare & Medicaid Services, n.d.). The team at GHS in South Carolina contacted South Carolina Medicaid Administrative Offices to seek support for a Strong Start grant application and was referred to the Director of the South Carolina Department of Health and Human Services (SC DHHS). GHS presented to SC DHHS the South Carolina-specific positive birth and disparities outcomes from CP at GHS (see Picklesimer et al., 2012). Rather than support the Strong Start grant application, the director of SC DHHS agreed to financially support the statewide scale-up of GPNC from 2013-2015 to include start-up of CP in ten new sites, process evaluation, and enhanced reimbursement of up to $150 to providers for women with Medicaid who participate in CP (Covington-Kolb, 2014).

Prior to applying for start-up funding, each interested practice was required to attend a Centering Healthcare Institute Model Implementation Seminar, which were held in November 2012 and November 2013, and November 2014. Through these seminars, stakeholders from multiple obstetrical practices interested in implementing CP gathered to talk about the process. These seminars were facilitated by an experienced Centering Healthcare Institute faculty member and by the State CP expansion coordination team. During the daylong session, participants had the opportunity to learn more about CP,

meet faculty from CHI, hear from providers from sites in South Carolina that have successfully implemented CP, and ask questions.

CenteringPregnancy expansion sites were selected through a competitive application process. After the Model Implementation Seminar, sites were invited to submit an application. Groups that decided to initiate GPNC, or adopt the program (Durlak and DuPre, 2008), submitted applications, which were reviewed by a committee, which included representation from the South Carolina Department of Health and Human Services, South Carolina March of Dimes, the Centering Healthcare Institute, Greenville Health System team, and the Coordinator of the process evaluation. Practices were selected based the Centering Healthcare Institute "Centering Readiness Assessment," which scores availability of appropriate space, adequate patient volume, at least two provider teams, the percent of all providers involved in CP, and the level of administrative support (Centering Healthcare Institute, 2014). An additional selection criterion used by the South Carolina team was the percent of Medicaid women in each practice, since DHHS funded scale-up and wanted to ensure that sites receiving funding would substantially serve and benefit women enrolled in Medicaid. Five sites were selected by the application committee and trained by the Centering Healthcare Institute to offer CP group prenatal care in 2013. Two additional sites were selected and trained to provide CP in 2014, and the final three sites were notified in 2015 that they have been selected to implement CP.

Key policy and donor agencies, SC DHHS, Birth Outcomes Initiative (BOI), South Carolina March of Dimes, and CHI, helped support the new practices during the start-up phase. Support was provided in the form of funding, training, sharing

77

experiences, and enthusiasm for and high-level attention to CP implementation. The broad-based support from both state and national-level agencies exemplified the strong political will that existed to make CP expansion a reality in South Carolina. This resulted in enthusiasm for CP and a desire on the part of practices to participate in a groundbreaking GPNC expansion project.

One of the most important scale-up system level elements that influenced the start-up process was *financial support* for start-up funding at each site for CHI model implementation, training, membership, and ultimately site certification that typically costs between $31,000 and $75,000 per site, depending on the size of the site, from South Carolina March of Dimes and SC DHHS. These new CP practices benefitted from funding for start-up and certification costs and enhanced reimbursement rates for providing GPNC services. The positive experience overall was fundamental in convincing BlueCross Blue Shield of South Carolina to provide enhanced reimbursement for GPNC services as well. The role of SC DHHS funding and support was essential to GPNC start-up and sites were selected based on the number of Medicaid women potentially served through GPNC.

Effective communication across CP practices has facilitated discussion about best practices and ways to resolve challenges. Communication was facilitated between practices and the Statewide Expansion Coordinators through a South Carolina CP Consortium, which was essential to the success of the start-up process. Through this consortium, enthusiasm for the model by practitioners and clinic staff intensified, best practices were shared, and a sense of statewide teamwork was established. Among the most important challenges of maintaining active involvement in the Consortium was staff

turnover and changing contact information. The Statewide Expansion Coordinator kept in regular contact through emails, telephone, and in-person meetings. The Coordinator had to request updated contact information from practice administrators in order to keep the consortium going. Steering committee members from all of the practices met regularly with the Statewide CP Coordinator through South Carolina CP Consortium meetings. CHI provided system redesign, basic, and advanced facilitation *training and technical assistance.* Sites were also provided necessary training and technical assistance by the Statewide Expansion Coordinator through individual practice site visits, multi-site group meetings, email, and telephone communication. Information, such as marketing, healthcare check-up procedures, billing codes, and data collection procedures was shared between sites at regular CP Consortium meetings (via phone and in-person).

Discussion

We described the social processes and contextual influences operating during the early phases of implementing GPNC at five individual healthcare practices and scaling up GPNC to the state level in South Carolina. The significance of scale-up processes, practices components, and interactions cannot be understood without critically examining context using a wide lens; "all things are interconnected and that the meaning of anything depends on its context" (Clark, 2002, p. 32). For example, the most important processes, components, and interactions in implementing and scaling up CP were: 1) effective use and creation of windows of opportunity and explicit political commitment; 2) stakeholder involvement through navigating relationships and circumstances in ways that were consistent with their values; 3) state-level financial support; 4) training and technical assistance, 5) individual system-level stakeholder and administrative support; and 6)

organizational collaborations and the use of steering committees. There is currently a large gap between the evidence-base of health approaches and widespread implementation of successful health interventions, (Fixsen et al., 2005; Glasgow et al., 2012) potentially resulting from the challenges of integrating interventions within complex health systems (de Savigny & Adam, 2009; Paina & Peters, 2012; Fixsen et al., 2005). To date, this is the only process evaluation of GPNC scale-up that identifies most important aspects of the early phases of implementation and scale-up as they co-occur.

Making use of and creating windows during both GPNC pre-implementation at each of the five sites and the start-up phase of the scale-up process proved to be essential. Strategic choices were made as stakeholders at GHS built relationships and alliances with state-level policy makers and supporters (Lapping, 2012) at SC DHHS to get CP policy agendas into the South Carolina public health systems (Pelletier et al., 2012). These windows also fostered policy champions (Pelletier et al., 2012) through the South Carolina Birth Outcomes Initiative. Advocacy during windows of opportunity was required to actively build political commitment to CP because there were multiple problems competing for the SC DHHS Director's resources and attention (Gilson & Schneider, 2010; Simmons et al., 2007). Creating and making use of opportunities, large and small (Lapping, 2012), was indispensable to moving CP from one successful practice in South Carolina to five practices throughout the state. Key decisions and actions at state and local levels occurred in ways that were consistent with stakeholder values (Clark, 2005). The three most common values expressed by stakeholders who wanted to provide CP for their patients were the rapport they could build with patients, as well as the well-being and knowledge they believed women would receive through CP. Novick et al.

(2009) described a similarly high regard for CP by midwives in their study of implementing CP in two urban clinics in the northeastern United States.

Specific strategies that drove the start-up phase of scale-up were the provision of critical start-up and reimbursement financial resources through SC DHHS and South Carolina March of Dimes. Financial support has been consistently instrumental in scaling up health interventions (Billings et al., 2007; Cooley & Kohl, 2006; de Savigny & Adam, 2009; Gillespie et al., 2013; Lapping, 2012; Simmons et al., 2007; World Health Organization, 2011). Future health intervention scale-up endeavors should also focus on effective training and technical assistance (de Savigny & Adam, 2009; Fixsen, 2005; Simmons, 2007; World Health Organization, 2011) potentially through a statewide coordinator. In addition to training and technical assistance from the Centering Healthcare Institute, local expertise provided through the South Carolina Statewide Expansion Coordinator team was instrumental in the GPNC start-up process.

Decision-makers within individual health systems had to navigate their expectations for how CP would change their practices, as well as the changes they needed to make in order to implement the intervention into their existing, complex systems during the pre-implementation phase (de Savigny & Adam, 2009). Without building strong administrative support, the initial phases of implementing a new intervention into existing systems are not feasible (Fixsen et al., 2005), especially CP (Novick, 2009). Important collaborations were formed within healthcare systems where decisions were made about how CP would be implemented within their practices. Though it was difficult to schedule meetings with people across disciplines, these leaders knew steering committee meetings were critical for continued buy-in, planning, and problem solving.

81

Strengths of this evaluation research include the use of explicit conceptual frameworks in the analysis of scaling up a healthcare model across five diverse healthcare settings and the innovative use of concepts from policy sciences into process evaluation. Additionally, important information on concurrently implementing GPNC within five existing practices, as well as how windows of opportunity and stakeholder values emerged from the data were used to strengthen the framework. Our identification of windows of opportunity at both the state policy level and local site level broadens the current conceptualization of the term, which typically includes windows at the state or national level (Lapping et al., 2012). The use of complex systems and implementation science to study these iterative processes in real-time enhanced the rigor of this study. There are few prospective analyses in the scale-up literature, and this manuscript details the initial phases. This process evaluation was limited by the lack of perspectives presented from state-level policy-makers and health insurance decision-makers. Attempts were made to interview leaders at SC DHHS, however, changes in leadership that occurred during the process made scheduling interviews difficult.

As CP becomes widely implemented across the United States and groups begin to consider how to move this intervention to scale at the state or national level, there are important considerations that should be made during planning and early phases of the process. The success of GPNC pre-implementation phase at individual practices and the start-up phase of scale-up at the state level could not have been accomplished without the effective use and creation of windows of opportunity at both state and individual practice levels. Findings from this study show that despite pervasive resistance to policy changes within complex health systems (Fixsen, 2005), interdisciplinary collaborations, such as

82

those formed through steering committees and at the BOI meetings, made the early phases of CP implementation and scale-up achievable. Through these meetings, site-specific challenges and opportunities were discussed and new policies and procedures were created and disseminated. Both at the state level and individual practice levels, decision-makers acknowledged and addressed numerous contextual factors that challenged and promoted these phases. Most importantly, state-level financial commitment through start-up funds and enhanced reimbursement for GPNC made it possible for clinics throughout the state to even consider providing CP to their patients.

There are important, unanswered questions in the literature about how to initiate intervention scale-up (Gilson & Schneider, 2010). The results of this study fill gaps in knowledge about decisions that are made to move GPNC to scale (Novick, 2009) to the state level after successful outcomes at one healthcare practice in the state (Picklesimer et al., 2013), and how the new model is introduced into well-established, complex health systems. It builds on prior smaller-scale CP implementation research, which showed that important decisions must be made about how to implement CP considering real-world contexts (Hackley et al., 2009; Novick, 2009) because aspects of CP implementation are associated with health outcomes (Novick et al., 2013). Future research should include information on how policy decisions that promote GPNC scale-up are made and put into practice. Furthermore, important evaluations can be done examining how contextual elements promote or challenge CP implementation and scale-up, as well as building on current, limited literature associating CP implementation with maternal and child health outcomes.

83

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4.2 Implementation and Scale-up of Group Prenatal Care to Five Healthcare Practices in South Carolina

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Abstract

Introduction: Poor birth outcomes and racial disparities in birth outcomes in South Carolina are widely recognized problems. Increasing the availability and accessibility to quality care to improve maternal and child health outcomes, especially among vulnerable groups, universal access to effective care should remain a priority. Important questions in the literature remain about strategies and determinants of scaling up sexual and reproductive health interventions and how scale up is managed over time. CenteringPregnancy is associated with improved birth outcomes and reduced rates of racial disparities in preterm birth throughout the United States. CenteringPregnancy was expanded to and implemented in to five healthcare sites in South Carolina in 2012. The aims of this mixed-methods process evaluation were to: 1) identify the level of CP implementation in real-time; 2) understand which CP characteristics influenced implementation; 3) identify characteristics of and processes in each site were important for CP implementation across the five sites; and 4) identify the processes, strategies, and conditions that allowed state-level expansion of GPNC to five sites throughout South Carolina.

Methods: Data were collected through 29 individual and group interviews with key stakeholders, three site observations of six to nine group prenatal care sessions with women, two surveys of group facilitators across sites, review of policies, meeting notes, and conference proceedings.

Results: All five sites had high levels of fidelity to CP model (82.9-86.9%), dose delivered (90.6-100%), and dose received (monitored through site certification). Reach was low with 313 women enrolled in 12 months, from September 2014 through

September 2015. CenteringPregnancy characteristics such as cost, complexity, and adaptability were important considerations for implementing sites. Site characteristics and processes that influenced implementation included convening leadership steering committees, level and type of administrative support, human resources, recruitment, and billing. During the state-level expansion process, key processes, strategies, and conditions included state-level political and financial support, community engagement, and training and technical assistance.

Conclusions: This is the first evaluation of how CP can be implemented at the organizational level within existing healthcare systems, and how to move CP to scale at the state level. Despite contextual challenges, successful GPNC implementation occurred at these five sites through state-level support and training, strong organizational advocacy, and site-level leadership and staff capacity. Successful CP expansion within existing, multiple complex health systems was possible in the presence of political will, financial support, and community engagement. Findings of this study lay the groundwork for future decision-makers who are interested in expanding a new model of healthcare into diverse health systems at the state level in the United States.

Introduction

Poor birth outcomes and racial disparities in birth outcomes in South Carolina are widely recognized problems (South Carolina Department of Health and Human Services, 2013). In 2011, South Carolina had the 7th highest infant mortality rate of all 50 states in the nation at 7.4 per 1,000 live births, which was higher than the national rate of 6.07 per 1,000 live births. Racial disparities in infant mortality between Black and White infants has been cause for concern, with mortality in 2011 at 11.67 per 1,000 live births for

Black infants compared to 5.36 per 1,000 live births for White infants (United States Centers for Disease Control and Prevention, 2015).

To improve maternal and child health outcomes, especially among vulnerable groups, universal access to effective care should remain a priority through increased availability and accessibility. Addressing barriers to care can help reduce health disparities (Simmons et al., 2007; United Nations, 2014). For most interventions to reach people in need beyond small instances of success, scale-up of effective interventions is necessary (McCannon et al., 2007). Evidence-based solutions to promote public health exist and can spread spontaneously, but the rate and consistency at which they are implemented and spread does not meet the demands created by the current burden of the world's major health concerns (McCannon et al., 2007; Simmons et al., 2007). Consequently, deliberate scale-up efforts should be actively and dynamically pursued through collaborative efforts (Glasgow et al., 2012; McCannon et al., 2007; Simmons et al., 2007; Shiffman, 2007). Without diffuse implementation of evidence-based health solutions, there is a risk of missed opportunities to improve people's lives and health through effectively using the time, energy, and funding initially spent creating these interventions (McCannon et al., 2007).

There is growing evidence of the association of CenteringPregnancy (CP), with improved birth outcomes and reduced rates of racial disparities in preterm birth throughout the United States (Grady & Bloom, 2004; Ickovics et al., 2003, 2007), and in South Carolina (Picklesimer et al., 2012). CenteringPregnancy also has been associated with better knowledge about pregnancy (Baldwin, 2006), patient satisfaction (Ickovicks et al., 2007), post-partum family planning (Hale et al., 2014), and psychosocial outcomes

91

(Heberlein et al., 2015). While there is evidence to support GPNC implementation to address birth outcomes and disparities, few studies have been published on the quality of GPNC implementation and implementation strategies (Hackley et al., 2009; Novick, 2012; Tanner-Smith, 2012). To date, there is no existing framework for operationalizing the implementation and scale-up of GPNC within existing health care systems.

Two obstetrical practices began offering CP in 2008. A retrospective cohort study published in 2012 reported a 47% reduction in the odds of preterm birth for women in CP compared to traditional prenatal care (Picklesimer et al., 2012). Given this evidence of the potential impact of CP on birth outcomes, the South Carolina Birth Outcomes Initiative proposed expanding access to CP as a core strategy to improve birth outcomes and reduce racial disparities in the state. In January 2013, the South Carolina Department of Health and Human Services (SC DHHS) began to invest in an initiative designed to scale-up CP from two to twelve sites throughout the state.

A significant aspect to scaling up health interventions such as CP is systematic evaluation of processes and outcomes aimed at understanding the determinants (i.e., *processes, strategies, and conditions*) involved in interventions that have been moved to scale within real-world contexts across health systems (Glasgow et al., 2012; King et al., 1987). Evaluations can define which elements or *characteristics of the intervention* should maintained, while others can be adapted to meet local *contexts* and challenges (Durlak & DuPre, 2008; King et al. 1987; Simmons et al., 2007; Saunders et al., 2005; Scheirer, 2000; Patton, 2008).

This evaluation research examined the expansion of CP to and implementation in five healthcare practices across South Carolina. The SC DHHS and March of Dimes

provided each site with funds to cover: 1) training for providers and staff in the CP model, 2) a contract with the Centering Healthcare Institute (CHI) for a Model Implementation Seminar and practice support through the site approval process, and 3) a limited budget to cover any necessities for running groups and outfitting the group space (i.e., such as patient notebooks, snacks, blood pressure cuffs, chairs or other educational materials). Concurrently, SC DHHS made incentive payments available through the Medicaid Managed Care Organizations for providers using the CP model. In 2014, BlueCross BlueShield of South Carolina and BlueChoice® HealthPlan of South Carolina also began providing reimbursement for CP care. Recognizing the importance of process evaluation, SC DHHS also provided funding for the evaluation of the scale-up of GPNC in South Carolina.

In this article, we present results of the evaluation of the *implementation* phase at the organizational level at each site. During the implementation phase, the health intervention is fully operational with organizational commitment to staffing and support, and it becomes a standard practice of care (Fixsen, 2005). Monitoring and evaluating the implementation process is critical to understanding both how the intervention was implemented with regard to *fidelity, dose delivered, dose received,* and *reach,* and to enhance the potential success of moving the intervention to scale (Durlak & DuPre, 2008; Hanson et al., 2010; Hartmann & Linn, 2008; King et al., 1987; Simmons et al., 2007).

The specific aims of this study were to: 1) identify the level of CP implementation in real-time, including fidelity, dose delivered, dose received, and reach at the five sites; 2) understand which CP characteristics influenced implementation; 3) identify characteristics of and processes in each site were important for CP implementation across

the five sites; and 4) identify the processes, strategies, and conditions that allowed state-level expansion of GPNC to five sites throughout South Carolina. In the following sections, we discuss the processes, strategies, and conditions influencing CP implementation at the site-level and CP expansion at the state-level to five complex healthcare settings.

Methods

This was a prospective, mixed-methods process evaluation of the CP implementation at five individual healthcare practices and state-level scale-up of CP throughout the state of South Carolina from 2013 to 2015. The methods included individual and group interviews, observations of CP groups at different sites, document review, and surveys (Table 4.1). Data were collected from January 2013 to December 2014.

Durlak and DuPre (2008) identified eight conditions for implementation of prevention and health promotion interventions in a meta-analysis of 542 studies: *fidelity, dosage (delivered and received),* quality, participant responsiveness, program differentiation, monitoring control/comparison groups, *reach*, and *adaptation*. Fidelity, dosage, reach, and adaptation were measured for this process evaluation and are defined below for the context of this expansion project.

We conducted baseline steering committee group interviews prior to CP implementation at sites. We conducted the first follow-up steering committee interviews within 6-7 months of conducting the first CP group at each site and the second follow-up steering committee interviews between 12-18 months after CP implementation at each site. We conducted individual interviews with group facilitators between 12-18 months

94

after CP implementation at each site. All interviews were recorded and transcribed. We conducted systematic observations of CHI trainings, a CHI conference, South Carolina CP Consortium, and South Carolina Birth Outcomes Initiative, group observations at three sites, were conducted throughout the process. We administered two surveys on model fidelity and content to group facilitators (Table 4.1). These data were used to describe and understand the processes, challenges and successes of site-level implementation and the second phase of statewide scale-up (i.e., expansion), as well as to document general trends experienced across South Carolina. While we did not asses the success of the intervention measured by outcomes, these results of this research project will inform how designing, implementing, and supporting GPNC within existing healthcare systems influences the process of scaling up GPNC to the state level.

The processes, strategies, and conditions associated with CP expansion were obtained through individual interviews with Statewide Expansion Coordinators, CP coordinators, and group facilitators, as well as through group interviews with steering committee members. The evaluation team also conducted document reviews of meeting minutes, trainings, conferences, SC DHHS bulletins, and scale-up procedures (Table 4.1).

Table 4.1 Process Evaluation Plan for Implementing CenteringPregnancy in South Carolina

	Process Evaluation Questions	Data Sources	Tools & Procedures
Processes, Strategies, and Conditions for CP Expansion	1. What were the key processes, strategies, and conditions that allowed state-level expansion of GPNC to five sites throughout South Carolina	CP facilitators, CP coordinators, steering committee members at each site, statewide expansion coordinators, & evaluation team	Individual interviews with statewide expansion coordinators, CP coordinators, and group facilitators; group interviews with steering committee members; document review of meeting minutes, trainings, conferences, SC DHHS bulletins, and scale-up proposals
Fidelity	2. To what extent was CP implemented consistently with the theories and philosophies used to create it as outlined in the 13 Essential Elements?	CP facilitators & evaluation team	Self-reported survey administered to facilitators; field notes from observations
Dose delivered	3. To what extent were all sessions and modules within the Facilitator's Guide implemented?	CP facilitators & evaluation team	Self-reported survey administered to facilitators; field notes from observations
Dose received	4. Did participants give CP an overall high rating? 4. Did staff feel they provided high quality overall care?	CP facilitators & steering committee members	Individual interviews with facilitators and group interviews with steering committees; results from CHI site certification process.
Reach	5. How many women participated in CP at each site and what percent OB patients received CP at each site?	Statewide expansion coordinator via birth outcomes data from sites	Number of CP women seen, provided by the Statewide Expansion Coordinator

CP Characteristics	6. Which CP characteristics influenced implementation?	CP facilitators, CP coordinators, steering committee members at each site, statewide expansion coordinators, & evaluation team	Individual interviews with statewide expansion coordinators, CP coordinators, and group facilitators; group interviews with steering committee members; document review of meeting minutes, trainings, conferences, SC DHHS bulletins, and scale-up procedures
Site Characteristics and Processes Related to Implementation	7. What contextual elements at each site influenced CP implementation? 8. What were the challenges of implementing CP at each site and how were they overcome?	Steering committees, CP coordinators, CP facilitators, & evaluation team	Group interviews with open-ended questions for steering committees; individual interviews with CP coordinators and with facilitators; document review of meeting minutes, trainings, conferences, SC DHHS bulletins, and scale-up procedures

Fidelity to the CenteringPregnancy Model

There are three key components to the CP model of care: 1) Healthcare assessments by a licensed clinical care provider during group time in a private corner in the same group space, as well as patient self-care activities to assess women's own blood pressure, weight, and body mass index. 2) Groups are facilitated, rather than taught in a didactic manner by two trained facilitators. 3) Women are provided support through relationships among group members and interactions with facilitators (Rising et al., 2004).

97

Fidelity, or the extent to which CP was implemented consistently with the theories and philosophies used to create it as outlined in the 13 Essential Elements (Table 4.2), which include the three key components of CP: healthcare assessment, education, and support. Fidelity was measured through a survey to all facilitators and through group observations at three sites (Table 4.1).

Table 4.2 Essential Elements of CenteringPregnancy (Rising et al., 2004, p. 399)

Essential Elements
Health assessment occurs within the group space.
Participants are involved in self-care activities.
A facilitative leadership style is used.
The group is conducted in a circle.
Each session has an overall plan.
Attention is given to the core content, although emphasis may vary.
There is stability of group leadership.
Group conduct honors the contribution of each member.
The composition of the group is stable, not rigid.
Group size is optimal to promote the process.
Involvement of support people is optional.
Opportunity for socializing with the group is provided.
There is ongoing evaluation of outcomes.

Dose Delivered

Dose delivered, or the extent to which all sessions and modules (Table 4.3) within the Facilitator's Guide were implemented, was measured by a survey to all facilitators (Durlak & DuPre, 2008), as well as group observations at three sites (Table 4.1). CHI has determined a range of educational topics for each of the ten GPNC sessions, and content is generally associated with gestational age (e.g., common discomforts, family planning, breastfeeding, and birthing experiences). These topics are generally covered in order, however, the facilitative style of CP allows for flexibility when new issues emerge that are important for the group to discuss (Table 4.3).

Table 4.3 Centering Pregnancy Educational Content (Centering Healthcare Institute, 2013)

Session Number	Weeks Gestation	Educational Content
Session 1	12-16	My pregnancy, what's most important? Personal goals, group guidelines, confidentiality agreements and photo release, prenatal testing, nutrition, and healthy lifestyle choices
Session 2	16-20	Common discomforts, body changes during pregnancy, back pain, and oral health
Session 3	20-24	Relaxation, breastfeeding, family dynamics
Session 4	24-28	Family planning and safe sex, safety, family dynamics, sexuality, domestic violence/abuse, fetal brain development, and preterm labor
Session 5	26-30	How am I doing? Comfort during labor, labor and breathing, birth facilities, medications, early labor
Session 6	28-32	Labor decisions, birthing experience
Session 7	30-34	Decisions after the baby is born, newborns, pediatric care, caring for your baby, circumcision, brothers and sisters
Session 8	32-36	Feelings, parenting, kick counts, emotions, baby blues, postpartum depression
Session 9	34-38	Thinking ahead, putting it together, newborn safety, infant massage
Session 10	36-40	Newborn care, growth and development, home and family changes, mom and newborn postpartum – when to call the clinic

Dose Received

The indicators for *dose received* of CP by women were whether or not participants gave CP an overall high rating and how facilitators felt about the quality of the care they provided during groups (Durlak & DuPre, 2008). These indicators were measured by in-depth interviews of facilitators, as well as by whether or not sites passed the CHI certification process because one certification requirement is that most women give CP an overall high rating of their CP experience (Table 4.1). The process evaluation

99

team requested the actual percentage of woman who rated their experience with CP highly, however, sites were not able to make this information available to the team.

Reach

The rate at which the target population participates in the intervention, as well as the representativeness of participants of their group is called *reach* (Durlak & DuPre, 2008). In this expansion project, reach was defined as the number of women served by CP and was obtained through practice-reported data to the statewide coordinator. Efforts to reach eligible women were also documented through group steering committee interviews.

CenteringPregnancy Intervention Characteristics, Adaptation, and Site Characteristics and Processes

CenteringPregnancy intervention characteristics, *adaptations to CP,* and *site characteristics and processes* were monitored through individual and group interviews, and document reviews of meeting minutes, trainings, conferences, SC DHHS bulletins, and scale-up procedures (Table 4.1). Adaptations were defined by modifications made to the original CP model.

Results

CenteringPregnancy Implementation Monitoring

Once individual practices moved into the expansion phase, practices began to fully implement CP within their health systems. There were key elements that contributed to successful CP implementation. That is not to say that any site experienced implementation without complications. All sites faced challenges and all sites found ways to address those challenges. Logistics, such as time, space, finances, personnel,

technology, marketing, recruitment and enrollment went through extensive troubleshooting and improvement at each site. Implementation monitoring results for each of the five sites on fidelity, dose delivered, and reach are detailed below (Table 4.4).

Practices varied in many organizational and contextual factors (Table 4.4). Practices were located across the state of SC, with two in very large urban settings (Sites 2 and 4), two in smaller cities (Sites 1 and 5), and one located in two smaller towns (Site 3). Overall, practices served mostly Medicaid eligible women, while some practices and locations served mostly privately insured women. Four practices were hospital-based (Sites 1, 2, 4 and 5) and one was an independent practice (Site 3). Four practices were OB/GYN clinics (Sites 2-5) and one was a family practice clinic (Site 1) with a lower obstetric volume than the other practices.

All five monitored sites had a high level of **fidelity** to the 13 Essential Elements of the CP model (Table 4.4). Self-reported fidelity to the model ranged from 82.9-86.9%. Observed fidelity to the model was higher for the three practices that were observed for an entire CP group at 87.5-95.8%. Overall, there was also a high level of self-reported **dose delivered** (content covered) among the five sites at 90.6-100%. Educational topics that were most important to cover were common discomforts during pregnancy, breastfeeding, labor, when to call the clinic, and newborn health and safety. The topics that were least important, according to facilitators, were sexuality, infant massage, pediatric health, family changes after birth, and food diaries/servings.

All five sites were certified by CHI to continue providing CP and had an acceptable percentage of women who rated their CP experiences highly, according to CHI (**dose received**).

Table 4.4 Implementation Monitoring of CenteringPregnancy, by Randomized Site Number

Randomized Site Number	Fidelity Score		Dose Delivered	Implementation Criteria Score	Reach	Characteristics
	Self-reported Fidelity Score (based on 13 Essential Elements and sub-elements)	Observed Fidelity Score (based on 13 Essential Elements)	Self-reported Content Score	Average Score of Self-reported Fidelity, Observed Fidelity, and Dose Delivered	# CP Patients from September 2013 – September 2014	Practice Type, Location[1], and Enrollment Model[2]
1	85.7%	95.8%	92.2%	89.9%	37	Hospital-based family practice residency clinic; approximately 27,000 city population; Opt-in enrollment model
2	86.9%	Not observed	100.0%	93.7%	51	Hospital-based OB/GYN residency clinic; 128,000 city population; Opt-out enrollment model
3	82.9%	Not observed	90.6%	86.9%	129	Independent OB/GYN clinic with CP offered at two locations; over 16,500 population for both towns; Opt-out model
4	83.8%	87.5%	95.0%	89.4%	36	Hospital-based OB/GYN clinic in two locations with CP offered at one; over 133,000 city population; Opt-out at one location and Opt-in at the other
5	84.6%	95.8%	92.4%	89.6%	60	Hospital-based OB/GYN clinic; over 41,000 city population; Opt-in enrollment model

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[1] Population estimates according to the United States Census Bureau. State and County Quick Facts: South Carolina. Retrieved on April 9, 2015 from http://quickfacts.census.gov/qfd/states/45000.html

[2] Opt-out enrollment model means all eligible women are enrolled in CP unless patients specify that they want individual PNC. Opt-in enrollment means that women are initially offered a choice between GPNC and individual PNC before enrollment.

Additionally, the group facilitators who were interviewed reported that groups were going well and that they feel confident in their facilitation skills. Facilitators said that women enjoy group care, "The sessions themselves are great; patients enjoy them, they are fun to facilitate" (group facilitator). **Reach** was the most challenging implementation condition to monitor, as practices were not able to directly provide information on the number of births for all patients seen at their practice during the year. The number of CP patients who delivered was reported through the number of CP sessions each woman attended and whether or not she attended the post-partum CP visit to the Statewide Expansion Coordinator. Overall, reach was low at 313 women, throughout the state from September 2014 through September 2015. Site-specific reach ranged from 36-60 women at four of the five practices (Sites 1, 2, 4, and 5) to 129 women at one practice (Site 3). The latter practice (Site 3) concurrently ran CP at two clinics in two towns and ran an opt-out enrollment model where eligible women are automatically enrolled in CP unless they specified that they preferred to be seen in individual prenatal care (Table 4.4).

CenteringPregnancy Program Characteristics Related to Implementation

There were particular characteristics of the CP program itself that stakeholders identified as influences on the implementation process. The *cost* of CP was an important consideration for most practices. One clinic administrator said, "We couldn't have done it without the start-up grant. We wouldn't have had enough money to train people." Delays in third party payer reimbursement created challenges for practices to purchase supplies necessary to sustain CP, so a few practices applied for additional grants to pay for things like women's notebooks and snacks.

Overall, the level of *complexity* of the CP educational components were not something that concerned sites, though the level of detail in managing logistics and contexts created challenges that will be discussed later. Facilitators said that the materials were easy to implement, provided helpful guidelines, and were educational for women. Facilitating groups, rather than providing didactical education for women, was something that facilitators were eager to do and felt confident doing after being trained. The complexity of the model, all of its essential elements, and logistics (discussed below) can make the model challenging to implement and sustain, which was supported by findings of Novick and colleagues (2013) who found that multiple modifications were made to CP implementation as a result of constraints within existing systems.

The CP model allows for some *adaptability* based on healthcare system-level context "We have to make it work within the context of the resources we have" (steering committee member). For example, some sites implement eight of ten sessions, while others implement nine sessions. Some sites allow women who develop higher risk pregnancies, such as diabetes, to remain in group care after they are diagnosed. Some sites use CHI educational videos, while other sites use videos from other sources. The optimal group size is 8-12 women, though many groups had as few as 4-6 women throughout the first year of implementation. These practices chose to continue offering CP to their patients, even though it was not cost-effective to run such small group sizes, "They are still working on it because they feel those patients would really benefit from Centering" (South Carolina Consortium attendee). Group sizes for most practices were not of optimal size until the second year of implementation.

Site Characteristics and Processes Related to Implementation

Multiple site characteristics and processes emerged as being particularly influential on the implementation process, including steering committees, support, dedication of time, scheduling and record-keeping, personnel, marketing and enrollment and patient demographics. Other influential elements were data collection expectations, training and technical assistance, and financial structures. *Steering committees* strategically brought together politically influential people from both within practices and people externally associated with the practice. These meetings allowed decision-makers to regularly address challenges and concerns, brainstorm solutions, share ideas, and make plans for the future of CP at their site. They also created a space where critical buy-in happened. The level of s*upport from administrators* within the practice and outside of the practice but within the healthcare system greatly influenced CP implementation. At least one administrator at each site who could oversee the process was essential. Practices with unsupportive hospital marketing departments were limited in the ways they could market CP to the community.

The amount of *time* the CP model takes to implement was substantially more than what was necessary for traditional individual prenatal care. CP resulted in less productivity because providers typically saw fewer women during the 90 to 120 minute sessions than during the same amount of time in individual care. Group facilitators and coordinators often used time before and after clinic or during lunch hours to prepare for group care, to set up the room, organize snacks and guest speakers, fill out Centering Counts evaluation forms, and record medical information in electronic charts. Some practices provided dedicated part-time or full-time staff to CP Coordinator roles. In order

to be selected by the Statewide Expansion team and CHI to implement CP, practices were required to show that they had support from administrators, were willing to dedicate time to oversee CP, and could accommodate group sizes with a room that had adequate *space.*

Scheduling and managing *medical record systems* were unforeseen challenges for some groups, but not for other groups. Initially, templates had to be created in order to streamline documentation for group care. Some facilitators have to work outside of business hours to keep patient records current and to feel confident that they have reviewed upcoming patient histories. Because of the number of patients and *personnel* involved in coordinating groups, dedication and attention to detail were necessary for scheduling group care. People who created managed scheduling had to plan for eight to twelve patients at a time for the duration of their pregnancy and blocks of time for a facilitator and co-facilitator to coordinate and prepare for groups. Practices with high rates of staff turnover had a difficult time managing CP during that time because multiple new staff members in key roles had to be trained.

Marketing, recruitment, and enrollment were constantly required of practices to fill CP groups. Each practice established site-specific eligibility criteria for group care patients. Healthcare providers at each practice let women know about their option to receive GPNC, however, some providers at a few practices are not as consistent about recruitment. Most sites enrolled low-risk patients though there was no consensus among sites on how they classified pregnancies as low-risk. Many sites relied on word-of-mouth marketing. A few sites dedicated substantial time and money into marketing in their communities, outside of their health system. *Patient demographics* influenced implementation as well. Practices with a large number of women who had other children

were not able to enroll those women as easily because childcare was an issue for them. Some women with Medicaid had transportation issues and were unable to attend CP at the location or time it was available.

Data collection was a requirement of practices involved in the statewide expansion of CP. Practices collected Centering Counts data (a requirement of site certification through CHI), additional health outcomes for the Statewide Expansion Coordinator, as well as measures for their own goals. In addition to their full-time job requirements, administrators compiled data on CP attendance, educational content, Essential Elements evaluations, CP practice goals, cost impact, steering committee and staff evaluations, patient evaluations, and health outcomes. These demands were challenging for most staff members because they felt overwhelmed by the amount of data and some did not feel confident in their database management skills, "I thought we had the tools and we would go to the two-hour session and do some paperwork afterwards…that was before we got the Centering Counts software. All numbers have to be plugged in," (group facilitator). All five practices had to overcome these challenges in order to become certified by CHI.

Despite some *training and technical assistance* regarding data collection, stakeholders indicated the need for more: "There needs to be a separate part of the training. You bring your administrative person and they meet separately and they figure out how to do [Centering Counts]" (group facilitator). Most individuals at all five practices appreciated the training provided by CHI on facilitating groups, as well as the technical assistance on CP implementation provided by the Statewide Expansion Coordinator, "The CHI training was very useful, especially the basic facilitators

107

workshop that lasted two days. The second advanced facilitator's workshop was helpful in trouble shooting topics that were hard to discuss in group," (steering committee member). "Well I know [Statewide Expansion Coordinator] has been super supportive, because [staff member] calls her and asks her questions all the time" (steering committee member).

Another important system-level contextual element that influenced CP implementation was the *billing and reimbursement structure*. Some practices were part of a larger hospital system and CP administrators were not able to track enhanced reimbursement. Initially in some practices, facilitators were purchasing snacks and supplies for GPNC out of their personal funds. In three practices, steering committees had to come up with creative ways to pay for CP supplies and snacks, through grants and group funds:

> That's been one of our big obstacles, getting reimbursement from the Medicaid insurances…the plan was to use that money to buy notebooks and replace anything that we may need. Up to this point, we've had a difficult time getting that reimbursement. We have a faculty fund that our faculty put money into each pay period. We can use that fund for educational purposes, so I've requested money from that fund a couple of times to help get us along until we can hopefully get our Medicaid reimbursement built up and better established, (clinic administrator).

Processes, Strategies, and Conditions for CenteringPregnancy Expansion

Political support and financial resources were important to the expansion phase of the scale-up process. Key policy and donor agencies, including SC DHHS, Birth

Outcomes Initiative, South Carolina March of Dimes, and CHI, continued to provide support to practices during the establishment phase through funding, training, sharing experiences, and mentorship for CP implementation. In addition to start-up funding, SC DHHS funded process evaluation and enhanced reimbursement for CP. Enhanced reimbursement is payment to providers through Medicaid Managed Care Organizations for routine prenatal care plus an additional $30 per patient per visit. Payments are made up to an additional $150 for each patient with five or more CP visits. During the second year of CP expansion, BlueCross BlueShield of South Carolina and BlueChoice Healthplan of South Carolina also offer enhanced reimbursement above the global maternity rate for women in CP to providers at $30 per patient up to 10 CP sessions. They also offered an additional $175 per patient with five-session retention (BlueCross BlueShield of South Carolina, 2014). The broad-based support from both state and national-level agencies exemplified the strong political will that existed to make CP expansion a reality in SC. The Statewide Expansion Coordinator noted, "I think that we had really visionary leadership in Medicaid that got this started and made it happen at all. That's sort of surprising and exciting." Resources to sustain CP became a standard part of the South Carolina health system. This political and financial support resulted in continued enthusiasm for CP and a desire on the part of practices to maintain their level of commitment to providing GPNC to women in their communities.

Advocacy efforts and community engagement strengthened the expansion process. Finding willing and eligible new sites during the second and third year of expansion proved to be more challenging in the expansion phase than in the start-up phase:

The first round was easy because we had a lot of [applications] and they were good. In the second round, there weren't as many. We thought we had a cool model and money and people would come to us. [It] was a wakeup call. They're not coming to us. This year [year-three] we did a big mailing…I held meetings around the state…I attended the South Carolina OBG Society Conference and a Perinatal Conference [to recruit]. I would do ten sites again and start doing intensive outreach sooner (Statewide Expansion Coordinator).

Health system capacity and resources improved through t*raining, monitoring, and supervision* for each of the five health systems via the South Carolina CP Consortium, Statewide Expansion Coordinators, and through CHI. Knowledge and evidence supporting CP were framed, generated, and disseminated through these venues. To further build their facilitation skills, share experiences, and discuss challenges to implementation practices sent facilitators to a one-day CHI Advanced Facilitation Training. Communication across CP practices facilitated discussion about best practices and ways to resolve logistical challenges. Technical assistance and training on issues such as marketing, healthcare check-up procedures, data collection and management, and billing codes were shared regularly through South Carolina CP Consortium meetings, which staff attended either via phone or in-person. A process evaluation report on the first 1.5 years of the scale-up was disseminated to SC DHHS, Statewide Expansion Coordinators, sites, and other stakeholders, which was then used to improve the expansion and implementation processes going forward. All five of the first group of practices to implement CP underwent rigorous site certification process through CHI.

Policies, norms, and guidelines regarding CP were regularly disseminated and followed at SC Birth Outcomes Initiative Meetings, through SC DHHS and Medicaid Bulletins, through South Carolina CP Consortium meetings, and within practices. Practices worked diligently to improve capacity and resources through changes in their own policies, norms, and guidelines as their CP services grew.

Discussion

Besides having access to CP guides, materials, and facilitation trainings, there were three site characteristics and processes that fostered successful implementation to take place within these five complex health systems (de Savigny & Adam, 2009). These included: 1) support and advocacy among key stakeholders within practices to foster an environment of enthusiasm; 2) site-level steering committee meetings convened, allowing decision-makers to ask questions, voice concerns, share ideas, problem-solve, and encourage buy-in; and 3) organizational capacity developed through dedication of time and staff to CP administration and group facilitation beyond what is typical for individual PNC.

Implementing innovations across complex health systems with multiple departments and stakeholders (de Savigny & Adam, 2009) takes considerable and strategic management over time (Gilson & Schneider, 2010). Clear communication across practices was a key tool for sharing experiences and overcoming challenges. Coordination and management of the scale-up process occurred through the Statewide Expansion Coordination team. Through this indispensable visionary team, training and technical support were delivered, multi-group facilitation trainings through CHI were coordinated, tangible resources were provided, and the South Carolina Consortium was

created. Motivated leadership and management skills of this caliber significantly influenced the success of GPNC expansion and are supported across the scale-up literature (Billings et al., 2007; Cooley, 2006; de Savigny & Adam, 2009; Fixsen et al., 2005; Hartmann & Linn, 2008; and McCannon et al., 2007).

Support and advocacy for CP garnered interest and critical buy-in from various employees within the five practices, across influential departments in local hospital systems, and throughout the five communities. Key decision-makers at each practice convened regularly throughout the implementation process through steering committee meetings. Besides skill-related capacity, human resource capacity (i.e., staff) is one of the key organizational characteristics that should be monitored, as it is instrumental (World Health Organization, 2010) to the GPNC implementation process. In the case of GPNC implementation, CP necessitated a greater commitment to human resource capacity than was initially anticipated. Future endeavors to implement CP should consider at the outset the level of staff and time commitment needed.

There were three critical strategies and conditions for successful GPNC expansion to five healthcare practices across South Carolina: 1) strong political will and broad-based support for expansion at the state level, especially financial resources through enhanced reimbursement; 2) community engagement; and 3) establishment and use of a Statewide Expansion Coordination team for training, technical support, and resources. Without the existence of strong political will, community engagement, and a Statewide Expansion Coordinator, the expansion of GPNC in South Carolina would not have been successful.

During the expansion phase of GPNC scale-up, enhanced reimbursement through Medicaid paved the framework for BlueCross BlueShield and BlueChoice also to provide enhanced reimbursement to practices for providing CP to their patients. State-level support garnered additional enthusiasm for CP and a stronger commitment for providing GPNC services. Political support and advocacy have been cited as especially important for successful scale-up measures (Billings et al., 2007; Gilson & Schneider, 2010) and advancing health-related agendas (Lapping, 2012) and they were both found to be instrumental in CP implementation in and expansion to five healthcare practices throughout South Carolina. Without the level of financial commitment by SC DHHS and political advocacy at the state level through the Statewide Expansion Coordination team and SC Birth Outcomes Initiative, expansion of GPNC in South Carolina could not have occurred. Most practices acknowledge that without this support, they simply could not have afforded to bring CP to their practices.

These strategies, conditions and processes were echoed in the literature by both Simmons et al. (2007) and Fixsen et al. (2005) who found that external political and economic support, training and technical support, organizational administrative leadership and advocacy, and organizational capacity promoted successful implementation and scale-up of health interventions. The results of this evaluation facilitate better understanding of processes, conditions, and intervention characteristics that facilitate formal scale-up of evidence-based healthcare to the state level. Further, describing how context, as well as organizational and system-level strategies are navigated in the scale up process is essential in developing the literature; information on

113

how these elements and strategies can be used to promote implementation is limited (Fixsen et al., 2005).

This was the first in-depth, real-time process evaluation of implementation at five existing healthcare practices, as well as the first time CP expansion has been monitored at the state level. Each of the five sites had high levels of fidelity and dose delivered of the CP model and a strong level of dose received by their patients. Fidelity to facilitative leadership and group involvement of CP has been associated with lower rates of preterm birth and attending prenatal care visits in excess of 110% of expected visits and fidelity to CP content has been associated with lower rates of excess prenatal care visits (Novick, 2009). Though reach was low for most of the sites in this study, all of the sites consistently enrolled women into CP and started approximately one new group per month, effectively increasing their reach over the course of the process evaluation. As an indicator of the high-level of implementation, all five sites passed the rigorous certification process through CHI within the first two years of implementation.

The strengths of this study include consideration of the complexity of health systems and recursive processes, which allowed for a deeper understanding of the multiple pathways through which CP influenced and was adapted through various interactions within five existing healthcare systems. It also provided a nuanced understanding of contexts (i.e., some elements presented as challenging for some sites and facilitative for others) within existing, complex health systems. An important contribution of this manuscript is the detailed description of what informs and drives systems change. This process evaluation was limited by the lack of diverse perspectives presented from state-level policy-makers and health insurance decision-makers. Attempts

114

were made to interview leaders at SC DHHS, however, the change in leadership made scheduling difficult. Future research should include information on how policy decisions that promote GPNC scale-up are made and put into practice.

Future evaluations of GPNC implementation can analyze potential associations between the level of implementation and overall maternal and child health outcomes CP participants, as well as to different subgroups of participants (Durlak & DuPre, 2008). Another important aspect of future work will be to develop an understanding of the implementation threshold for CP related to outcomes. As the intervention is adapted to suit the context of each clinic, higher levels of implementation may not be associated with better health outcomes once a certain level of the 13 Essential Elements has been delivered. Likewise, it is possible that not all of these elements are necessary to benefit all subgroups of participants (Durlak & DuPre, 2008). Maternal and infant health outcomes associated with GPNC in South Carolina can be understood using findings of this work to fill gaps in knowledge about how fidelity and completeness of a prescribed GPNC model may impact outcomes and health disparities. There is also an opportunity for to examine the cost-effectiveness of the current CP model in South Carolina and how to establish the most efficient and cost-effective model for widespread implementation.

Important questions persist about strategies and determinants of scaling up sexual and reproductive health interventions (Simmons et al. 2007), and how scale up is managed over time (Gilson & Schneider, 2010). Demonstrating that an intervention can be implemented feasibly provides a framework for future expansion (World Health Organization, 2011). While there are studies associating GPNC with improved birth outcomes (Grady & Bloom, 2004; Ickovics et al., 2003, 2007), to date there has not been

115

an evaluation of how the intervention can be implemented within existing healthcare systems, nor has there been an evaluation of how to successfully move GPNC to scale. This study aimed to fill the gap in knowledge about how to implement a new model of healthcare in and expand it to multiple, diverse healthcare practices across the state. Despite contextual challenges, successful GPNC implementation occurred at these five sites through state-level support and training, strong organizational advocacy, and site-level leadership and staff capacity. Expansion of GPNC within existing complex health systems was possible when three strategies and conditions occurred: political will, financial support, and community engagement. Findings of this study lay the groundwork for future decision-makers who are interested in expanding a new model of healthcare into diverse health systems to the state level in the United States.

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117

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CHAPTER 5: SUMMARY

PROCESS EVALUATION OF CENTERINGPREGNANCY EXPANSION IN SOUTH

CAROLINA 2015 FINAL REPORT

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Acknowledgements

I. Executive Summary

CenteringPregnancy (CP) is an evidence-based model of group prenatal care (GPNC) that has been associated with improved maternal and child health outcomes and

potentially reducing maternal and child health disparities (Grady & Bloom, 2004; Heberlein et al., 2015; Ickovics et al., 2003, 2007; Picklesimer et al., 2012).

At the recommendation of the South Carolina Birth Outcomes Initiative the South Carolina Department of Health and Human Services (SC DHHS) invested in the expansion of CP to sites throughout the state as a necessary strategy for improving birth outcomes and reducing racial disparities in birth outcomes in January 2013. In addition to the two established CP sites in SC, in Easley and Greenville, seven new sites began to offer GPNC as an option to women seeking prenatal care between 2013 and 2014.

These findings are from the process evaluation of CP expansion in South Carolina, conducted from January 2013 – December 2014. Process evaluation involves examining the strengths and limitations of interventions, documenting implementation, and studying factors and contexts that could influence implementation (Durlak & DuPre, 2008; Saunders et al., 2005; Scheirer, 2000). The methods used by the process evaluation team include individual and group interviews, observations of CP groups at different sites, document review, surveys, and media analysis.

Fundamental Elements for Start-up Success

- Broad-based support from both state and national-level agencies exemplified the strong political will that existed to make CP expansion a reality in SC

- Fostering an environment of enthusiasm throughout the practice is essential

- Regular steering committee meetings allow important decision-makers to ask questions, voice concerns, share ideas, problem-solve, and encourage buy-in

120

- The CP Consortium is a strategic hub where providers meet, share ideas, and "lessons learned"

- Training for multiple sites (rather than training at individual sites) is helpful for networking and information-sharing

- Effectively and widely disseminating and using data for process improvement

- Enhanced insurance reimbursement is necessary for the sustainability of CP

Lessons Learned

- CP helps patients build relationships between group members and providers

- Changing the way care is provided is challenging at first for practices and individual providers

- There are additional logistical, time, care, and financial demands to providing CP than for traditional care

- Communication between and across CP practices have facilitated discussion over best practices and ways to address challenges

- Within practices, support from key stakeholders is essential to the intervention's success

- Enhanced efforts of marketing and recruitment, as well as communicating techniques across sites should be a priority

- Due to additional logistical and administrative demands of CP implementation, having a *CP Site Coordinator* at each site is necessary

- Planning for sustainability is a key component of implementing CP, including logistics, time, finances, marketing and recruitment

- Success of CP in South Carolina will be enhanced through investing more

time and resources into existing sites, including strengthening facilitation training, mentorship, and ongoing Level 1 training opportunities for sites with expanding CP services or staff turnover

- Observations and feedback should be offered by experts in South Carolina, in addition to current trainings provided by CHI

- Resident involvement in CP groups is important in promoting patient-centered and evidence-based OB care in future practice and should be supported throughout SC residency programs.

II. Introduction of Group Prenatal Care to South Carolina

CenteringPregnancy (CP) is an evidence-based model of GPNC that has been associated with improved maternal and child health outcomes and reduced maternal and child health disparities (Grady & Bloom, 2004; Heberlein et al., 2015; Ickovics et al., 2003, 2007; Picklesimer, Billings, Hale, Blackhurst, & Covington-Kolb, 2012). The model is supported by the Centering Healthcare Institute (CHI) and based in Boston, Massachusetts. CHI is a nonprofit organization that provides the expertise, training and tools necessary to start and sustain Centering group care practice. There are three key components to the CP model of care: 1) **Healthcare check-ups** by a licensed clinical care provider during group time in a private corner in the same group space, as well as patient self-care activities to assess their own blood pressure, weight, and body mass index. 2) **Educational content** is provided through group facilitation, rather than taught in a didactic manner by two trained facilitators. 3) Women are provided **support** through

relationships among group members and interactions with facilitators (Rising et al., 2004).

CenteringPregnancy was initiated in South Carolina in 2008 at Greenville Health System in Greenville, SC, through support from the March of Dimes, and independently at Mountainview Ob-Gyn in Easley, SC the same year. Greenville Health System reported a 47% reduction in the odds of preterm birth for women in CP in a retrospective cohort study published in 2012 (Picklesimer et al., 2012). Given the impact of CP on birth outcomes, shown through research at Greenville Health System and other sites in the United States, in 2012 the South Carolina Birth Outcomes Initiative proposed expanding access to CP as a core strategy to improve birth outcomes in SC. In January 2013, the South Carolina Department of Health and Human Services (SC DHHS) began to invest in its expansion to sites throughout the state.

Dr. Amy Picklesimer, a Maternal-Fetal Medicine specialist with the Greenville Health System was selected to oversee the SC DHHS CP expansion. Greenville Health System was selected because their practice runs one of the largest and most successful CP practices in the country, and Dr. Picklesimer was already working with the South Carolina Chapter of the March of Dimes on a similar statewide expansion project for CP. A "start-up package" was created for each new practice, which included 1) training for providers and staff in the CP model, 2) a contract with CHI for a Model Implementation Seminar and practice support through the site approval process and 3) a small budget to cover any necessities for running groups and outfitting the group space, such as patient notebooks, snacks, blood pressure cuffs, chairs or other educational materials.

Concurrently, SC DHHS made incentive payments available through the Medicaid Managed Care Organizations for providers using the CP model.

Prior to applying for start-up funding, each practice was required to attend a CHI Model Implementation Seminar, which proved to be a vital space for garnering stakeholder support. Model Implementation Seminars were held in November 2012 and November 2013, and November 2014. Through the seminars, stakeholders from multiple obstetrical practices with expressed interest in starting up CP gathered to talk about the process. These seminars were facilitated by an experienced CHI faculty member and by the State CP coordination team. During the daylong session, participants had the opportunity to learn more about CP, meet faculty from CHI, hear from providers from sites in South Carolina that have successfully implemented CP, and ask questions.

Expansion sites were selected through a competitive application process. After the Model Implementation Seminar, sites were invited to submit an application. Applications were reviewed by a committee, which included representation from SC DHHS, South Carolina March of Dimes, CHI, the Greenville Health System team, and members of this process evaluation committee. Practices were selected based on scores generated from the CHI "site readiness tool," which include number of OB patients, available physical space that could be used for groups, and support for model implementation from practice leaders. Additional criteria generated by the SC team included percent Medicaid patients in each practice. Since 2013, there have been three Model Implementation Seminars, followed by open periods for practices to apply for start-up. Fifteen practices attended the first two Model Implementation Seminars. Seven clinical sites throughout the state have been selected by the application committee and trained by CHI to offer CP prenatal care.

Between 2013 and 2014, all seven of the sites began to offer GPNC, following the CP model, as an option to women seeking prenatal care. The final three sites were notified in 2015 that they have been selected to implement CP.

Each site has trained facilitators comprised of a licensed care provider (physician, nurse practitioner or nurse midwife) and a co-facilitator who is often a nurse or support staff member. Steering committees were convened at each of the CP sites and include positions such as: group facilitators, other healthcare practitioners, center director, clinic coordinator, other clinic administration, marketing leader, internal process evaluation and benchmarking leader, support staff, and patients. All of the sites meet regularly with the Statewide CP Coordinator through SC Centering Consortium meetings.

III. Why Conduct a Process Evaluation of CenteringPregnancy Expansion?

SC DHHS is investing in CP as one of several strategies for improving birth outcomes throughout the state. This investment includes resources for clinical sites to initiate and implement CP in their practice, a rigorous outcomes evaluation, as well as for a team of external evaluators to document the implementation processes. Since the inception of CP expansion throughout South Carolina, this team has examined how sites are working to incorporate CP into their everyday practice of offering prenatal care and includes documentation of challenges faced, ways in which practices are meeting those challenges, and key successes. The main goals of the process evaluation are to:

1) Inform and support implementation processes at each site

2) Share lessons learned across sites

3) Inform next stages of expansion

125

4) Better understand the elements that explain outcomes

5) Serve as a model for other states or agencies seeking to expand an evidence-based healthcare model within an existing healthcare framework.

The importance of process evaluation cannot be overstated. It is clear that "the level of implementation affects the outcomes obtained in promotion and prevention programs" (Durlak & DuPre, 2008, p. 327). Effective implementation can lead to higher rates of success and stronger positive outcomes. Process evaluation involves examining the strengths and limitations of interventions, watching how implementation happens in "real-time," and studying factors, including context, that could influence intervention implementation (Durlak & DuPre, 2008; Saunders eta al., 2005; Scheirer, 2000). The findings of a solid process evaluation can be used both to modify the intervention so it is implemented as planned, as well as to describe what happened throughout the intervention, who was reached, and how the outcomes are related to these findings (Durlak & DuPre, 2008; Saunders et al., 2005; Scheirer, 2000). Through process evaluation, records are kept on intervention activities, interactions between stakeholders, sociopolitical influences, and other environmental contexts. Process evaluation is essential to effective intervention implementation as it helps clarify reasons for the intervention's success or shortcomings in reaching expected outcomes. It also provides a means through which implementers can learn from the successes of other sites, and importantly, how they were able to overcome barriers (Durlak & DuPre, 2008; King, Morris, & Fitz-Gibbon, 1987; Patton, 2008; Saunders et al., 2005; Scheirer, 2000).

126

IV. Description of the Process Evaluation

SCDHHS is supporting a three-year process evaluation, carried out by a team from the University of South Carolina Arnold School of Public Health. Note that only five sites from the first round of CP expansion (in 2013) are included in this summary report. Future reports to SCDHHS will summarize findings from all ten sites.

4.1 Process Evaluation Team

- Deborah Billings, PhD
- Kristin Van De Griend, PhDc, MPH
- Noël Marsh, BA
- Sarah Kelley, LMSW, MPH

4.2 Name and Location of CenteringPregnancy Sites

CenteringPregnancy expansion sites included in this evaluation were: AnMed Health Family Medicine, Tuomey Healthcare System OB-Gyn, University of South Carolina School of Medicine Department of Obstetrics and Gynecology, Carolina OB-Gyn at Georgetown Hospital System, and Medical University of South Carolina (Table 5.1). These are shown on the map below (Figure 5.1).

Table 5.1 CenteringPregnancy Sites in South Carolina, 2008-2014

Site Name	Location	Year initiated CP	Included in this summary
Greenville Health System	Greenville	2008	No, not an expansion site
Mountainview OB-Gyn	Easley	2008	No, not an expansion site
AnMed Health	**Anderson**	**2013**	**Yes**

Family Medicine			
Tuomey Healthcare System OB-Gyn	**Sumter**	**2013**	**Yes**
University of South Carolina School of Medicine Department of Obstetrics and Gynecology	**Columbia**	**2013**	**Yes**
Carolina OB-Gyn, Georgetown Hospital System	**Murrells Inlet**	**2013**	**Yes**
Medical University of South Carolina	**Charleston**	**2013**	**Yes**
Montgomery Center for Family Medicine	Greenwood	2014	No
Carolina Women's Center	Clinton	2014	No
Palmetto Women's Healthcare	Manning	2015	No
Lexington Women's Care	Lexington	2015	No
Costal Carolina OB-Gyn	Conway	2015	No

Figure 5.1. Map of South Carolina CenteringPregnancy Sites.

Note: Sites outlined in red were part of the process evaluation. Sites outlined in blue were not part of the study sample.

4.3 Evaluation Methods

The methods used by the process evaluation team include individual and group interviews, observations of CP groups at different sites, document review, surveys, and media analysis. Data collected was conducted from January 2013 – December 2014 (Table 5.2). Baseline steering committee **group interviews** were conducted prior to CP implementation at sites. First follow-up steering committee interviews were conducted within 6-7 months of conducting the first CP group at each site. Second follow-up steering committee visits were conducted between 12-18 months after CP implementation

at each site. **Individual interviews** were conducted with group facilitators between 12-18 months after CP implementation at each site. Interviews were recorded and transcribed. **Meeting observations** of CHI trainings, a CHI conference, CP Consortium, and SC Birth Outcomes, **group observations** at three sites, were conducted throughout the process. **Media** related to group prenatal care, CP, and birth outcomes in SC from January 2013 – November 2014 was collected and analyzed. **Two surveys** on model fidelity and content were administered to group facilitators. These data were used to describe and understand the processes, challenges and successes of the first phase of start-up and implementation at each site, as well as to document general trends experienced statewide.

Table 5.2 Methods Used in South Carolina CenteringPregnancy Process Evaluation by Clinical Site

Site Name	Location	Baseline Steering Committee Interview	1st Followup Steering Committee Interview	2nd Followup Steering Committee Interview	Individual Facilitator Interviews	Site Observations	Facilitator Essential Elements/ Content Surveys	Additional Information/ Documentation
AnMed Health Family Medicine	Anderson	02/2013	12/2013	09/2014	1 in 10/2014, Unable to schedule a second	10 sessions observed for 1 group, Fall/Winter 2014	Essential Elements – 09/2014 Content – 12/2014	Observational notes during site visits
Tuomey Healthcare System Ob-Gyn	Sumter	02/2013	11/2013	10/2014	2 in 9/2014	7 sessions observed for 1 group, Spring/ Summer 2014	Essential Elements – 09/2014 Content – 12/2014	Observational notes during site visits
University of South Carolina School of Medicine Department of Ob-Gyn	Columbia	02/2013	09/2013	09/2014	2 in 9/2014	7 sessions observed for 1 group, Summer/Fall 2014	Essential Elements – 09/2014 Content – 12/2014	Observational notes during site visits
Carolina Ob-Gyn,	Murrells Inlet & Georgetown	02/2013	10/2013	09/2014	2 in 9/2014	n/a	Essential Elements – 09/2014 Content – 12/2014	Observational notes during site visits
Medical University of South	Charleston	02/2013	02/2014	July 2014	One in October 2014	n/a	Essential Elements – 09/2014	Observational notes during site visits

Carolina					Unable to schedule a second		Content – 12/2014	
Statewide Coordinator	Greenville	n/a	n/a	n/a	n/a	n/a	n/a	Individual Interviews with 2 Coordinators: 10/2014
CHI Basic and Advanced Facilitation Trainings	Charleston, Greenville, & Columbia	n/a	n/a	n/a	n/a	n/a	n/a	Trainings for expansion sites were conducted and observed in: 05/2013, 06/2013, 04/2014, and 05/2014
Consortium Meetings	Greenville, Columbia, & Charleston	n/a	n/a	n/a	n/a	n/a	n/a	Consortium meetings attended in: 01/2014, 05/2014, 07/2014, 3 meetings in 08/2014 one in 11/2014
CHI National Conference	Washington, DC	n/a	n/a	n/a	n/a	n/a	n/a	National Conference attended in: 10/2013
Birth Outcomes Initiative	Columbia	n/a	n/a	n/a	n/a	n/a	n/a	Monthly meeting attended 2013-2014

V. CenteringPregnancy Implementation Monitoring

Implementation was monitored for fidelity, dose delivered, and reach (Table 5.3).

Each of these terms and how the results were obtained are discussed in detail below.

Table 5.3 Implementation Monitoring of CenteringPregnancy, by Randomized Site Number

	Fidelity Score		Dose Delivered	Reach	Characteristics
Randomized Site Number	Self-reported Fidelity Score (based on 13 Essential Elements and sub-elements)	Observed Fidelity Score (based on 13 Essential Elements)	Self-reported Content Score	# CP Patients from September 2013 – September 2014	Practice Type, Location[3], and Enrollment Model[4]
1	85.7%	95.8%	92.2%	37	Hospital-based family practice residency clinic; approximately 27,000 city population; Opt-in enrollment model
2	86.9%	Not observed	100.0%	51	Hospital-based OB/GYN residency clinic; 128,000 city population; Opt-out enrollment model
3	82.9%	Not observed	90.6%	129	Independent OB/GYN clinic with CP offered

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[3] Population estimates according to the United States Census Bureau. State and County Quick Facts: South Carolina. Retrieved on April 9, 2015 from http://quickfacts.census.gov/qfd/states/45000.html

[4] Opt-out enrollment model means all eligible women are enrolled in CP unless patients specify that they want individual PNC. Opt-in enrollment means that women are initially offered a choice between GPNC and individual PNC before enrollment.

					at two locations; over 16,500 population for both towns; Opt-out model
4	83.8%	87.5%	95.0%	36	Hospital-based OB/GYN clinic in two locations with CP offered at one; over 133,000 city population; Opt-out at one location and Opt-in at the other
5	84.6%	95.8%	92.4%	60	Hospital-based OB/GYN clinic; over 41,000 city population; Opt-in enrollment

Fidelity to the CenteringPregnancy Model

Fidelity, or the extent to which CP was implemented consistently with the theories and philosophies used to create it as outlined in the 13 Essential Elements (Table 5.4) was measured through a survey to all facilitators and through group observations at three sites (Durlak & DuPre, 2008). All sites had a high level of fidelity to the model (Table 5.3).

Table 5.4 Essential Elements of CenteringPregnancy (Rising et al., 2004, p. 399)

Essential Elements
Health assessment occurs within the group space.
Participants are involved in self-care activities.
A facilitative leadership style is used.
The group is conducted in a circle.
Each session has an overall plan.
Attention is given to the core content, although emphasis may vary.

There is stability of group leadership.	
Group conduct honors the contribution of each member.	
The composition of the group is stable, not rigid.	
Group size is optimal to promote the process.	
Involvement of support people is optional.	
Opportunity for socializing with the group is provided.	
There is ongoing evaluation of outcomes.	

Dose Delivered

Dose delivered, or the extent to which all sessions and modules (Table 5.5) within the Facilitator's Guide were implemented, was measured by a survey to all facilitators (Durlak & DuPre, 2008). All sites had a high rate of delivering recommended content to participants (Table 5.3).

Table 5.5 Centering Pregnancy Educational Content

Session Number	Weeks Gestation	Educational Content
Session 1	12-16	My pregnancy, what's most important? Personal goals, group guidelines, confidentiality agreements and photo release, prenatal testing, nutrition, and healthy lifestyle choices
Session 2	16-20	Common discomforts, body changes during pregnancy, back pain, and oral health
Session 3	20-24	Relaxation, breastfeeding, family dynamics
Session 4	24-28	Family planning and safe sex, safety, family dynamics, sexuality, domestic violence/abuse, fetal brain development, and preterm labor
Session 5	26-30	How am I doing? Comfort during labor, labor and breathing, birth facilities, medications, early labor
Session 6	28-32	Labor decisions, birthing experience
Session 7	30-34	Decisions after the baby is born, newborns, pediatric care, caring for your baby, circumcision, brothers and sisters
Session 8	32-36	Feelings, parenting, kick counts, emotions, baby blues, postpartum depression
Session 9	34-38	Thinking ahead, putting it together, newborn safety, infant massage
Session 10	36-40	Newborn care, growth and development, home and family changes, mom and newborn postpartum – when to call the clinic

135

Dose Received

The indicators for dose of the intervention received by women were whether or not participants gave CP an overall high rating and how facilitators felt about the quality of the care they provided during groups (Durlak & DuPre, 2008). These indicators were measured by whether or not sites passed the CHI certification process, as one of the requirements is that most women give CP an overall high rating of their CP experience, as well as by in-depth interviews of facilitators. The process evaluation team attempted to gain from sites the actual percentage of woman who rated their experience with CP highly, however, sites did not make this information available to the team.

All five sites were certified by CHI to continue providing CP, thus all five sites had an acceptable percentage of women who rated their CP experiences highly. Additionally, all facilitators believe that groups are going well and that they feel confident in their facilitation skills. Facilitators also said that women enjoy group care, "The sessions themselves are great; patients enjoy them, they are fun to facilitate" (CP facilitator).

Reach

Reach, or the number of women served by CP, was obtained through practice-reported data to the statewide coordinator (Durlak & DuPre, 2008). The number of women who had CP prenatal care and delivered at each site can be compared to the number of women who had traditional individual prenatal care and delivered at each site.

Recruitment

See "Logistics" below for a discussion on recruitment and marketing.

<u>Context</u>

There are system-level (internal) and external elements that influenced the level of CP implementation and scale-up (Chen, 2005). Examples of system-level contextual elements influencing CP implementation were **practice type** (i.e., independent or hospital-based clinic and family practice or obstetrics), **facilitator credentials** (i.e., physician, nurse practitioner, nurse-midwife), involvement or not of **medical residents**, **organizational collaboration** from departments within the system, such as hospital marketing, support from **leadership**, and **geographic location**, and **finances** from the start-up grant and enhanced reimbursement.

The process evaluation also revealed external contexts that impacted CP implementation (Chen, 2005), such as level of **political** and **community support** regarding prenatal care and maternal and child health, and conditions of the **local economy** can impact CP implementation.

VI. Key Implementation Themes

The following sections summarize the major findings in relation to CP start-up, implementation, and institutionalization in the sample of CP expansion sites for this process evaluation. Included at the end of each section are recommendations aimed at improving implementation in existing sites as well as informing continued expansion of CP throughout the state.

6.1 Start-up

Explicit political will, stakeholder involvement, and effective use of windows of opportunity were critical to the inception of GPNC scale-up in SC. Stakeholders' values were reflected in decisions they made throughout the process.

Explicit Political Will

Key policy and donor agencies, SC DHHS, Birth Outcomes Initiative, South Carolina March of Dimes, and CHI, helped support the new practices during the start-up phase. Support was provided in the form of funding, training, sharing experiences, mentorship and enthusiasm for and high-level attention to CP implementation. The broad-based support from both state and national-level agencies exemplified the strong political will that existed to make CP expansion a reality in SC. This resulted in enthusiasm for CP and a desire on the part of practices to participate in a groundbreaking GPNC expansion project.

Decision Making Approaches

Changing the way care is provided within existing healthcare systems can be difficult to achieve. Some clinics in this process established a top-down decision-making approach that enabled administrators to use their authority to bring CP to the practice. Physicians who supported bringing CP to their practice also used their status to persuade skeptical administrators and staff to support it.

Stakeholder Values

The scale-up process shows that motives, decisions, and actions of stakeholders are reflections of their values and what they are trying to achieve. These values were especially evident in stakeholder discussions of capitalizing or averting policy windows.

Leaders as sites stated the model would allow women a greater level of **rapport**, or relationships: "to form bonds and connect with other people in the community so that if they didn't have those support systems before, those can be in place" (steering committee member). Healthcare providers continue to promote the model of care in their practices, "as a facilitator, I really get to know the women a lot better in the group than I did one on one, but it is more emotionally intense" (group facilitator). Clinic staff often described the value of affection when deciding to implement CP because the believed the model would offer a better type of healthcare to promote patient **well-being**: "So a different approach which would have better outcomes and much better compliance" (steering committee member). They also value the **knowledge**, or educational aspect of CP for patients: "I feel it is very important that pregnant women get comprehensive care in a manner that they can understand and relate to, that is going to help them understand the whole process that they're going through" (nurse midwife group facilitator). Administrators believe that the residency education programs benefit from the model: "From a residency educator perspective, this is to me, a really exciting opportunity to shake the educational boat just a little bit" (residency program steering committee member).

Providers are eager to develop and practice their **skills** as facilitators in care, "When I came out of [training], I thought, 'Oh, I'd love to do that.' …It would be so much fun for me as a nurse midwife, to do this" (group facilitator).

Power and **wealth** were sometimes cited as values that reflected speculation of model implementation: "There is one provider who is just not sure whether or not it will make money for the practice. The provider isn't against it, but is not completely sold,

139

until the person sees that there is money coming in" (steering committee member). Valuing **conformity** was revealed through the expectation that there would be better compliance by patients, "if they really are committed to being a part of the group, then that's part of that commitment too, showing up and then participating when they're here" (steering committee member), as well as the intention to participate as a clinic in forming a new norm of care, "I think health care is moving toward a group care model and I wanted us to be in the forefront of that" (clinic administrator). Providers also expressed a deeper level of **respect** for patients because of the model, "I have a lot of respect for [patients] and what they're going through. It's a very positive experience. It's enjoyable" (group facilitator).

<u>Windows of Opportunity</u>

Windows of opportunity occurred during the statewide GPNC scale-up process at both the state and site levels. At the state level, these windows involved the identification of poor birth outcomes as a problem, presenting evidence of the benefits of GPNC to state and health insurance leaders, and public and political commitment to establishing GPNC as a standard of care throughout the state to address the issue (Kingdon, 1995). Key stakeholders took advantage of these windows to secure funding to implement and oversee the new model of healthcare at multiple sites throughout the state, "He [DHHS Director] said he would be interested in funding that as a way to try to move the needle on NICU stays and perinatal outcomes, so that's where we came up with the idea for the expansion…We thought we could do it … At that the same time, I told him, sustainability was really important and we would have to have some incentive payments.

So that first year, he [wrote] incentive payments into the contracts with the managed care organizations" (Statewide Expansion Coordinator).

At the individual site level, clinic decision-makers capitalized on policy windows by arranging meetings, attending grant application forums, applying for funding and support to implement the new model of care, and building staff commitment at their own sites, "Because I was able to meet with her [expansion coordinator] through the [South Carolina Perinatal Association] meetings, she knew that I was interested. I had seen her at Birth Outcomes Initiative and the Vision Team, and then we had dinner together and talked about it…I feel like we've got a team that we can be successful with. So that's the main interest for us" (clinic administrator).

Recommendations for CenteringPregnancy Start-up

- Political will and support from state and national level agencies must continue to highlight CP as a feasible, desirable and necessary prenatal care practice that can contribute to improved birth outcomes

- Key stakeholder support from within practices is needed before CP can be initiated. Who this is varies from site to site. Support from physicians is critical to start-up and continue CP efforts

- Active investments should be made to reach out to providers and staff who may not be supportive of CP or who may not understand it, so they can become familiar with it and eventually supportive of CP (or at least not actively resisting the model at their site)

- Use existing systems to introduce CP into hospital-based practices settings, requiring

buy-in and support of high level administrators, decision-makers and physicians

- As statewide expansion continues, create mechanisms for decision-makers in potential expansion sites to visit current CP sites so that they clearly understand its components, how it works and how it can fit into the structure and services of their own health care settings.

6.2 CenteringPregnancy Implementation in Sites

Once CP was implemented, there were key elements that contributed to CP being carried out smoothly. That is not to say that any site experienced implementation without complications. All sites faced challenges and all sites found ways to address those challenges.

6.2.1 Effective Collaboration

<u>Stakeholder Support</u>

Support from key stakeholders within the individual practice sites, such as administrators, clinic staff, and direct health care providers, was necessary for successful implementation of CP. At least one administrator at each site who could oversee the process was essential. Physicians were considered key stakeholders at each practice because of their abilities to influence the system, regardless of their involvement in CP.

While many stakeholders initially supported CP, effort was necessary to build support among hesitant or uncertain people within each practice both prior to implementation and as practices began to implement CP, "Early on if people weren't excited about it was just because they didn't know what it was, or they didn't understand it, and the more we get into it, the more we explain, the more inertia it gets" (steering

142

committee member). Throughout implementation, stakeholders at each of the practices have been actively engaging and reaching out to providers, staff and administrators to build support for CP, though some providers remain ambivalent, "Usually the people not supportive of Centering are the people who are not involved. They don't like the idea, don't understand the idea, or aren't able to be involved and are disgruntled" (Facilitator, hospital-based CP practice).

Team Effort

Practices with a cooperative staff describe how teamwork makes challenging tasks more manageable. A large number of varying roles are necessary to make CP work, from healthcare providers to administrators and ancillary staff. Teamwork helps with scheduling, patient flow, recruitment and marketing, and group facilitation, "They think that they are all working together and making it work" (clinic administrator). Another leader described how staff makes CP work, "They constantly exchange ideas during clinic. It's been a good team effort…they are wonderful. They want it to work and want it to be successful" (steering committee member).

Steering Committees

Steering committees strategically bring together politically influential people from both within their clinic and externally associated with it to address challenges and concerns, brainstorm solutions, share ideas, and make plans for the future of CP at their sites. These meetings also created a space where critical buy-in happened. Practices found it helpful to involve people from various disciplines with multiple perspectives and areas of expertise because CP affects multiple areas of the clinic. Steering committees met regularly, typically monthly, during the start-up phase and began to meet informally

or once every few months after their first few CP groups were underway. As sites approached their dates for site certification through CHI, steering committees began to meet more regularly again. One implementation challenge that most sites faced was scheduling these meetings because, "They are so busy running a practice and caring for patients" (clinic manager).

<u>Communication Across Sites: The CenteringPregnancy Consortium</u>

Communication between and across CP practices has facilitated discussion about best practices and ways to resolve challenges. Information, such as marketing, healthcare check-up procedures, and billing codes, is shared between sites at regular CP consortium meetings (via phone and in-person). One of the most important challenges of maintaining active involvement in the Consortium is staff turnover and changing contact information.

6.2.2 Group Facilitation and Participants

CenteringPregnancy implementers at the expansion sites consistently expressed that the CP model of care differs significantly from the traditional one-on-one model of prenatal care. Clinic providers and staff saw this change as both challenging and rewarding.

<u>Facilitative Leadership and Provider-patient Dynamics</u>

Facilitators must be willing to adapt to a facilitative style of providing care, which is a much different way of communicating with patients. Several CP group facilitators initially feared that the hardest part of facilitating groups would be to sit back and listen, letting the women take the lead. This was especially true for providers who are were accustomed to more didactic ways of teaching patients about what they should be doing

during pregnancy. While learning to facilitate groups was challenging at first for some providers, the overall sentiment for most by the end of the process evaluation was, "Most of the facilitators and co-facilitators really enjoy spending the time with the patients and feel like they get to know the patients better…in Centering than they would in more traditional care" (clinic director). "I feel more connected to our patients, get to know them a lot better. I have a lot of respect for them and what they're going through" (CP facilitator). Additionally, facilitative leadership allows patients to exchange their own stories and learn from and support each other, "I saw it was a great thing having that extra support and going through the same situations with women…how that helped" (CP facilitator).

6.2.3 Logistics

Implementing CP requires multiple logistical changes to the way obstetrical practices are run. Considerations must be made for the amount of time it takes to coordinate group care, space for groups to meet, group care templates for electronic medical record systems, refreshments, educational materials, marketing, scheduling, and finances. Due to additional logistical and administrative demands of CP, assigning one or more people the role of *CP Site Coordinator* is necessary for each practice. The CP model creates extra administrative, logistical, time, and care demands when compared to individual prenatal care.

Time

CenteringPregnancy is a more time-consuming model of care and results in less productivity than individual care because providers see six to twelve women (optimal

group size is 8-12) during the same amount of time they could see up to 16 women. This can be costly, depending on sites' financial and practice structure. Group facilitators and coordinators often took time before and after clinic and during lunch hours to prepare for group care, to set up the room, organize snacks and guest speakers, fill out Centering Counts evaluation forms, and record medical information in electronic charts (which otherwise happens in the room with patients during individual care), "It took more prep time than what we were prepared for" (CP facilitator).

Space

Providing care for a group of women and each support person requires a room with enough space to comfortably maneuver and complete all of the CP educational and health-assessment activities. Some practices renovated a permanent CP space, while others use existing meeting or waiting rooms. Practices that set up and break down equipment in impermanent spaces for each session find that aspect of CP to be time-consuming, stressful, and exhausting, "It's very complicated, it takes a lot from everyone involved to get the schedule blocked off to make sure no one's walking through the front door" (CP facilitator). Another facilitator said, "One of our biggest obstacles is that we don't have a dedicated space. If we had a space we could just leave alone that would be huge…everyday we're bringing everything out, setting it up, taking it down, then putting it back up "(CP facilitator). A lack of designated space also limited some sites' abilities to expand to concurrent groups.

Electronic Medical Records

Keeping electronic medical records for CP groups has worked well for some practices and has been very challenging for other practices. Initially, templates had to be

created in order to streamline documentation for group care. Some facilitators have to work outside of business hours to keep patient records current and to feel confident that they have reviewed upcoming patient histories, "If you have go to a patient's EMR, …and look through things, it is not a quick process. So, the prep time for [a facilitator] to get ready for a CP group, when she has a whole group of them, with only 3 minutes assessment time, you can't quickly prepare yourself for that group. Except for ahead of time with prep time" (clinic administrator).

Marketing and Recruitment

Some practices are using an "opt-out" approach to recruitment, whereby any low-risk pregnant woman (risk is determined by healthcare providers per site guidelines) is scheduled into CP unless the woman says she wants individual prenatal care. Practices use a variety of advertising strategies: staff t-shirts, pamphlets, posters, articles in magazine and newspapers, webpages (Appendix L), Facebook groups, videos, billboards, and radio advertisements. Other CP sites were not able to successfully market outside of their own clinic due to contextual dynamics beyond their control. It was common for some healthcare providers are more committed to speaking with their patients about CP than other providers are, "I think they don't think about it. I think it's just been done the traditional way for so long that they don't think to offer it" (CP facilitator).

Scheduling

Scheduling group prenatal care can be very challenging, especially since this is a new model of care to existing obstetrical practices. Provider schedules constantly had to be restructured in order to create space to conduct two hours of CP, plus preparation before and time to process after groups. Groups were assigned to facilitators, and

147

multiple patients were assigned to a group and are scheduled out for the duration of their prenatal care. Two practices had the added responsibility of scheduling medical residents to each group in addition to their current medical education structure. Good communication and collaboration were essential to this process.

Data Collection and Management

Centering Counts is a database provided by CHI and its submission is required at the time the site applies for certification. This database includes information regarding each woman in CP and each group: attendance, clinic goals for CP, cost impact, essential elements evaluations, group numbers, provider data, staff and administration surveys, steering committee evaluations, health outcomes, and patient evaluations. The Statewide Expansion Coordinator facilitated this process and sites found the assistance to be very helpful. The predominant responses to Centering Counts, however, were that instructions in the files were unclear, CHI-led training would be beneficial for CP coordinators, and that the process was confusing, unclear, very time consuming, stressful, and frustrating.

Eligibility Criteria and Enrollment

Each practice establishes site-specific eligibility criteria for CP. Most sites enroll low-risk patients, however, there was no consensus among sites on this term. All practices enrolled women regardless of their type of insurance (i.e., Medicaid or private insurance). All practices enrolled English-speaking women, as the cost for translation services was a barrier. Only women with singleton births were enrolled. By the end of data collection, practices were not enrolling women with diagnosed diabetes prior to pregnancy, but they allowed women to stay in groups if they developed diabetes during pregnancy.

Materials and Supplies

There are additional materials and supplies necessary to run group prenatal care than for traditional individual care. The cost of CHI-sponsored materials, such as educational videos and posters, was a barrier for most practices, so most practices created their own or purchased them from other vendors. Overall, practices found the CHI facilitator's kits with guides and activities, as well as the mom's notebooks to be very beneficial, "I think the book we give out is a really great tool. Because they can take it with them and it encompasses what the do in the group setting, so they have reinforcement. It covers the general topics that every pregnant woman should know about. I'm very happy with book, and a vast majority of patients are happy with their books" (CP facilitator).

Personnel

Most practices found that running CP cost effectively required having nurse practitioners or nurse-midwives facilitate groups and nurses or medical assistants co-facilitate groups, though some practices did utilize physicians as group facilitators. Financial limitations prevented practices from hiring a full-time coordinator for CP at first; rather, responsibilities were redistributed across multiple people within the clinic, "I think there should be one set administrative person who is in charge…What we have we've put together piecemeal…But it's never been really clear about what that [coordinator] is supposed to be doing" (CP facilitator). By the second year of implementation, most sites created a CP Site Coordinator position, though people in that role were expected to manage many other clinic duties in addition to coordinating CP. Staff turnover was a significant challenge for many sites over the last two years, "The

problem is, with the front office, we have so much turnover that we have to continually train the individuals who come in how to do that and I feel like the whole front office in general is a constant training ground" (steering committee member).

<u>Training and Technical Assistance</u>

Most CP providers found the CHI basic and advanced facilitation training workshops to be useful. Some people suggested that the basic facilitation workshop be condensed into one day; while other people said it should be split between facilitation training and administrative trainings (i.e., how to coordinate CP within a practice and how to manage Centering Counts). Most sites agreed that ongoing training should be made available at no or low-cost if possible due to staff turnover.

Recommendations for CenteringPregnancy Logistics

- Continue to provide ongoing support for free or low cost Level 1 facilitation training for sites, considering the rate of staff turnover

- Assess provider comfort and experience with facilitative learning and find ways that providers, especially facilitators, can access additional training, practice and support particularly from colleagues throughout the state

- Inform all staff about site-specific successes and highlight the work of those implementing CP to generate additional support for CP from providers and administrators. Steering committees are a potential source for this

- Steering committees at each practice should meet once per month (either in person or over the phone), take notes, and report back to all CP clinic staff, as well as the CP Expansion Coordinator with progress, questions, and plans. This can enhance quality improvement at each site and across sites

- Continue to provide modes of communication between and across CP practices, as this has offered opportunities to discuss best practices and ways to resolve challenges

- Due to additional logistical and administrative demands of CP, assigning one or multiple persons the role of CP Site Coordinator is necessary. Continue to dedicate staff time for this position

- Continue to monitor the amount of time that planning and preparation for CP groups takes, both for Coordinators and for facilitators. Dedicated, paid staff time for facilitators to prepare for groups and complete post-group evaluations are critical for CP to succeed at each site

- Marketing and recruiting are necessary for continued success. These efforts should be monitored and supported by steering committees. Continue sharing successful strategies among CP sites

6.3 Medical Resident Involvement in CenteringPregnancy Implementation

Medical residents are involved in CP groups in the family medicine residency program, AnMed Health, in Anderson, SC and at the Medical University of South Carolina in Charleston, SC. All family medicine residents at AnMed are introduced to CP through an informal training; however, participation is not mandatory. Since the initiation of CP in June 2013, two to three residents per group participate with some residents opting to participate in more than one group.

There are many advantages to providing training in group-based care during residency, including addressing multiple core competencies of required training content and modeling inter-professional care (McLeod, LaClair, & Kenyon, 2011). For family

151

medicine residents, an added benefit comes via an expanded scope of practice through CP training that encourages OB care in later practice (McLeod, LaClair, & Kenyon, 2011). All residents indicated a desire to continue with CP in their careers and all but one indicated that they would work to establish CP at other sites. Exposing residents to CP early in their practice has positive implications for the expansion and sustainability of CP and other group-based models throughout their career (Cristin, Reid, Andrews, & Steiner, 2013).

Educational

All residents noted a distinctive difference between CP and traditional prenatal care with the added benefit of educational components for CP patients. Residents indicated that the educational piece was important because it allowed for patients to be more informed consumers and permitted patients to address topics they might not otherwise explore if in a traditional setting. One participant noted the difference their involvement in CP has made in their delivery of traditional prenatal care, "Because there's so much more education in [CP]…even if I'm seeing somebody in the regular clinic, I think about things I need to touch on...it's definitely made me educate people better and get their input more."

Organizational

The organizational structure of CP at this site appeared to have a large impact on the positive experiences residents expressed. All residents indicated that the site prioritized CP in their schedules and that the scheduling was conducive to their family medicine training needs. They expressed a feeling of support for their desire to attend CHI trainings; however, most indicated a need for a more formal introduction to CP in

152

their orientation. Residents also identified that marketing in the community to encourage more women to attend CP groups is important.

<u>Relationships</u>

Residents expressed positive aspects associated with the group setting, both to them and their patients. Residents indicated that CP allows for more relationship building between the doctor and their patient and provides an additional support structure for patients who might not have a support system in place. An added bonus identified by residents came in the form of learning from their patients and using a facilitative approach. For example, "You don't always know the answer. I kind of like that I don't always know the answer… it gives us a chance to learn, so we learn as a group. I love the group dynamic."

Recommendations for Medical Resident Involvement in CenteringPregnancy

- To ensure that residents are getting the most out of their involvement with CP, structured training through CHI is necessary

- Prioritize CP in residents' schedules to allow for total involvement of the residents in all CP sessions

- Making CP a part of the culture of the resident training program through integration in existing orientation and grand rounds is an important part of demonstrating the value of the group to the residents and teaching faculty

- Resident involvement in CP groups is essential in promoting patient-centered and evidence-based OB care in future practice and should be supported across South Carolina

6.4 Institutionalization

Institutionalization is a necessary component of implementation, through which an intervention becomes part of the normal way of conducing business (Billings et al., . Factors affecting it need to be considered and addressed before and during active implementation. One important mark of the institutionalization of CP is site certification, a rigorous process through which individual sites become officially approved by CHI to conduct CP groups. All five of the sites were certified through CHI by the end of the second year of implementation.

<u>Financial Perspectives</u>

There are significant financial costs to implementing CP, including CHI membership, trainings, consultations, and system redesign, as well as travel to trainings and meetings, educational materials, snacks, and personnel. The start-up grant to each practice made this expansion possible, "We couldn't have done it without the start-up grant. We wouldn't have had enough money to train people. They've been nice to train a nurse and a nurse practitioner" (clinic administrator).

Current reimbursement from third-party payers, such as Medicaid and private insurance, cover most costs associated with traditional prenatal care, but are not enough to cover CP. Practices counted on enhanced reimbursement from Medicaid to immediately offset the extra costs of provider time, mom's notebooks, and snacks, however, transition to enhanced reimbursement was not as smooth as stakeholders hoped. Practices are looking forward to the recent (July 2014) policy change that allows enhanced reimbursement from Blue Cross/Blue Shield as well.

<u>Impact of Marketing and Recruitment</u>

Recruitment into CP impacts the number of women receiving care through CP, which is also a mark of institutionalization. Several practices rely on "word of mouth" for recruitment. Practices should continue to focus on marketing and recruitment in order to sustain CP within their practices.

<u>Adaptation</u>

As CP is implemented into existing healthcare systems, there are internal system-level contexts and external influences on implementation, "We have to make it work within the context of the resources we have" (steering committee member). For example, some practices implement 9 of the 10 sessions, some sites moved to 6-week due date groupings instead of 4-week groupings, and some sites allow later entry into CP (24 weeks) than the usual 16 weeks. Some sites do not cover all of the recommended material, such as prenatal and infant massage, because the topics are not as relevant to their patients or are not brought up spontaneously by the group for discussion. If there are future changes in the enhanced reimbursement model, some practices indicated that maintaining their site certification through CHI to provide CP for their patients would be too cost prohibitive for them to maintain.

Recommendations for Institutionalization

- Recruitment and marketing are essential to the success of CP to let people in the community know about the availability of CP. This may bring new patients practices and to CP. Continue marketing and recruitment strategies, sharing ideas with other sites.

- Continue to monitor costs and track enhanced reimbursement. This reimbursement is

to be used directly for CP to provide notebooks, snacks, and group activities for women. Individual staff members should not incur costs of CP. Enhanced reimbursement is necessary for the sustainability of CP.

VII. Conclusions

South Carolina is unique as a state because of its commitment to improving birth outcomes through the expansion of CP. The goal is that CP is one of several key interventions that are supported and fostered throughout the state so that SC becomes a leader in showing how birth outcomes can be improved. SC DHHS is committed to continue expansion of CP to other sites throughout the state.

All five of the sites monitored in this process evaluation have worked very hard and formed important collaborations in order to make CP successful in their practices. Steering committees were able to come up with creative solution for challenges they faced during the process in order to situate CP within the context of their work. Results from the process evaluation showed that practices implemented CP with a high level of fidelity to the model and they delivered a high level of dose (content) to patients. Site approval was granted through CHI at all five sites, which demonstrated sufficient reach, fidelity to the model, internal administrative and staff support, and high ratings of CP by women.

Ways in which the work can be sustained over time need to continue to be explored and incorporated into expansion plans. This includes involving a range of insurers to participate and contribute to the financial sustainability of CP.

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APPENDIX A: LOGIC MODEL FOR SCALING UP GROUP PRENATAL CARE IN SOUTH CAROLINA

Inputs & Resources	CP Activities	Outputs	Intermediate Outcomes & Results *(For Future Outcome Evaluation)*
• Budget/funds • CHI – start-up costs & support staff • Steering committee •CP coordinator • Facilitator teams • Internal leadership • Administrative support • Staffing • Community partners • Support services (e.g., lactation, social work, physical therapy, oral health) • Mission alignment	• System Redesign (by CHI) • Advanced Facilitation Training (by CHI) • Site approval (by CHI) • Staff development • Create buy-in among clinic staff and patients • Team-building • Patient recruitment • Scheduling - groups of women with similar due dates • Data collection • Group sessions – 10 meetings (once/month for 4 months & every other week until 36-40 weeks gestation) for 10-12 women <u>13 Essential Elements</u> 1. Health assessment occurs within group space 2. Participants are involved in self-care activities 3. A facilitative leadership style is	• Sites will complete sessions for at least 1 group • On average,10-12 women will attend each group • Patients will meet with their healthcare provider at least 10 times for 1.5-2 hours during their pregnancy • Patients' weight, blood pressure, BMI, and gestational age will be calculated & maternal/fetal risk assessment will be conducted at least 10 times during pregnancy • Patients will meet with other women with similar due dates 10 times during pregnancy • Patients will learn gestationally-appropriate educational topics at least 10 times during their pregnancy <u>Institute of Medicine's Rules</u>	<u>For Healthcare Systems:</u> • Reduced healthcare costs for patients, hospitals, and public/private insurance • Healthcare providers are able to spend more time with high risk patients • Continuity of care for patients with providers • Reduced disparities in maternal & child morbidities and mortality <u>For women:</u> • Patients will develop friendships, community, and support • Increased well-being before, during and after pregnancy • Improved self-image and self-care • Reduced maternal mortality, fetal loss, and unnecessary

170

• Marketing materials • Patient needs • Group space • Snacks for groups • Transportation • CP implementation plan • Educational materials • Medical equipment • Mat /table for patient exam • CP Notebook & Facilitators Guide	used 4. The group is conducted in a circle 5. Each session has an overall plan 6. Attention is given to the core content (gestationally-appropriate topics) although emphasis may vary 7. There is stability of group leadership 8. Group conduct honors the contribution of each member 9. Composition of the group is stable, not rigid 10. Group size is optimal to promote the process 11. Involvement of support people is optional 12. Opportunity for socializing with the group 13. Ongoing evaluation of outcomes	for Health Care Redesign (Essential Element): • Care is based on continuous healing relationships (3, 7, 9) • Care is customized according to patient needs and values (3, 5, 12) • The patient is the source of control (in self-care and activities), (2, 3) • Knowledge is shared and information flows freely (3, 4, 5) • Decision-making is evidence-based (13) • Safety is a system property (2, 4, 7, 11) • Transparency is necessary (2, 4, 13) • Needs are anticipated (3, 5) • Waste is continuously decreased (efficient use of time and space) (1, 7) • Cooperation among clinicians is a priority	pregnancy intervention • Reduced risks to health prior to subsequent pregnancies and beyond childbearing years • Improved parenting skills <u>For fetus:</u> • Reduced preterm birth, intrauterine growth retardation, congenital anomalies, and failure to thrive; • Healthier growth and development, immunization, and health supervision • Reduced neurologic, developmental, and other morbidities • Reduced child abuse and neglect, injuries, and extended hospitalization after birth For families: • Promoted family development and positive parent-infant interaction • Reduced unintended subsequent pregnancies • Identified behavior disorders leading to child neglect and family violence

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Environmental and System-Contextual Elements
Center Type (hospital or clinic)
Leadership/governance
Service Delivery
Human Resources
Financing
Geographic Location
Political/Economic Climate (internal and external)
Community Support
Secular Trends
Population Served (low or high risk, Medicaid or private insurance)
Participant Determinants: cultural factors, health status, peer support, family income, education,
health behaviors, domestic violence, transportation/access to care, substance use/abuse

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APPENDIX B: MAP OF SOUTH CAROLINA CENTERINGPREGNANCY SITES
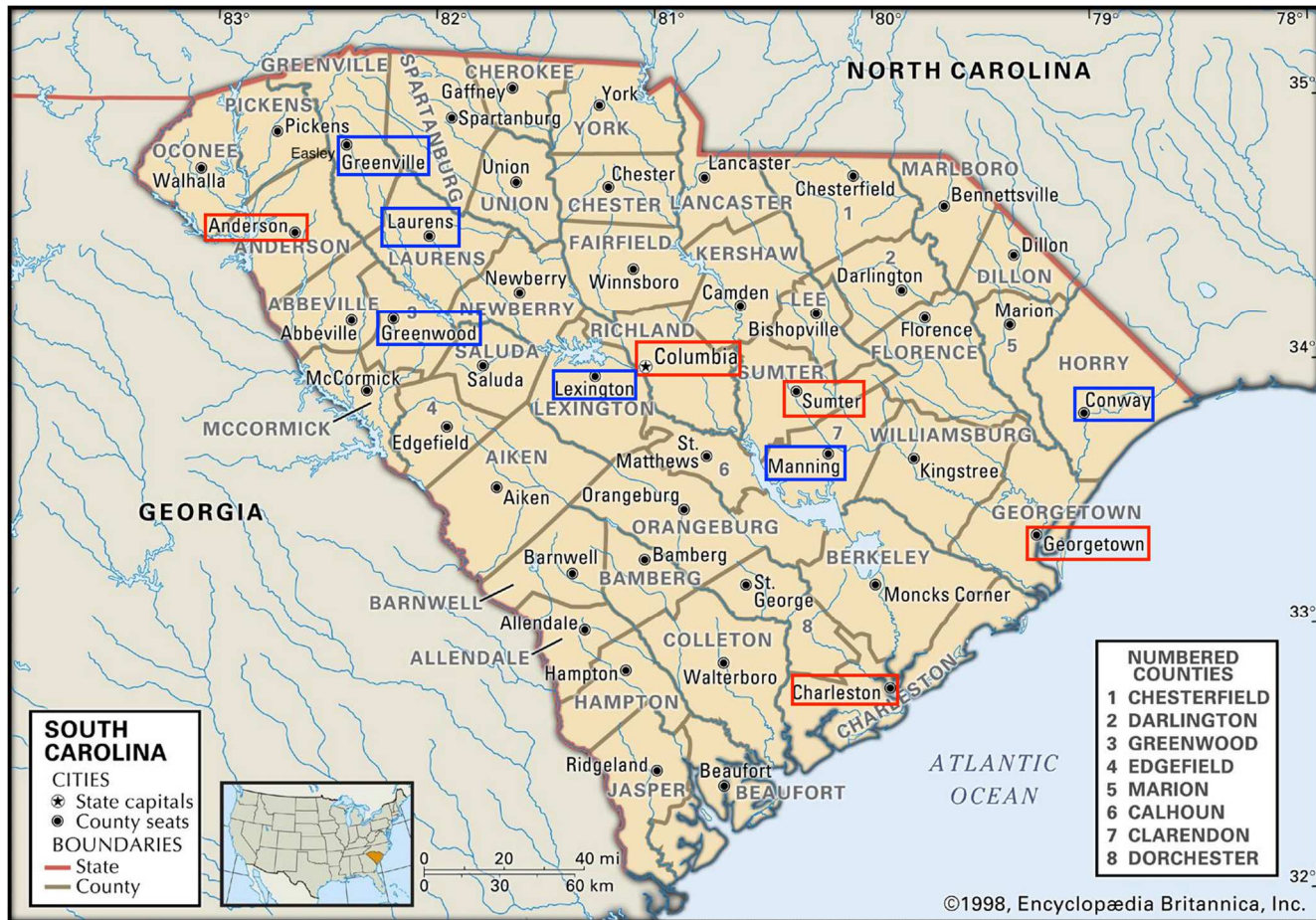
	Process Evaluation Questions	Data Sources	Tools & Procedures	Timing of Data Collection	Data Analysis & Synthesis	Reporting
Fidelity	1. To what extent was CP implemented consistently with the theories and philosophies used to create it (facilitative and socially supportive) as outlined in the 13 Essential Elements?	CP facilitators & Evaluation team	Self-reported survey administered to facilitators) and field notes from observations	The process evaluation team observed most of the sessions for one group for three of the five sites; surveys were conducted of facilitators about the 13 essential elements at the end of the second year; these data were triangulated with individual facilitator interview data	Calculate score based on observational checklist from three sites and from the essential elements survey	Formative – within one month of observation and at approximately the end of the first year of implementation (interview data); Summative – at the end of the process evaluation (year 2)

174

Dose delivered	2. To what extent were all sessions and modules within the Facilitator's Guide implemented?	CP facilitators & Evaluation team	Self-reported survey administered to facilitators) and field notes from observations	The process evaluation team observed most of the sessions for one group for three of the five sites; surveys were conducted of facilitators about the content that is provided during each session of groups at the end of the second year; these data were triangulated with individual facilitator interview data	Calculate total score based on observational checklist from three sites and from the educational content provided	Formative – within one month of observation and at approximately the end of the first year (interview data) of implementation; Summative – at the end of the process evaluation (year 2)
Dose received	3. Did participants give CP an overall high rating? 4. Did staff feel they provided high quality overall care?	CP facilitators & steering committee members at each site	Individual interviews with facilitators and group interviews with steering committees. Results from CHI site certification process.	Group interviews conducted three times at each site over the course of two years, at baseline, fall/winter of the first year, and fall of the second year; at least two individual interviews conducted in the fall of the second year at each site	Facilitator and steering committee narratives through qualitative analysis. Analysis of which sites received CHI site certification	Formative – at approximately the end of the first year of implementation; Summative – at the end of the process evaluation
Reach	5. How many women	Statewide	Table provided by	This data will be	The	Summative – at

	participated in CP at each site and what percent OB patients received CP at each site?	Expansion Coordinator via self-reported data from CP Coordinators	the Statewide Expansion Coordinator	collected at the end of the process evaluation	Statewide Expansion Coordinator will collect and analyze this data and report it to the evaluation team	the end of the process evaluation
Recruit-ment	6. What procedures were used to recruit participants into CP?	Steering committees & CP facilitators, & Evaluation team	Document review; media analysis; group interviews with steering committees; individual interviews with facilitators; media analysis;	Administered twice at each site over the course of 1 year, at approximately 4 and 9 months after implementation begins.	Narrative description of procedures; Themes from groups interviews through qualitative analysis	Formative – reported within one month of group interviews to address any problems; Summative – at the end of the 1st year of implementation
Context	8. What **contextual elements at each site** (infrastructure, organizational context, and participant determinants) **and external elements in each community** (political/economic climate, community	Steering committees, CP coordinators, CP facilitators, & Evaluation team	Document review; Media analysis; Groups interviews with open-ended questions for steering committees; individual interviews with	Administered once at each site over the course of 1 year, at approximately 9 months after implementation	Narrative description of procedures; Themes from group interviews through qualitative analysis	Formative – at approximately the end of the first year of implementation; Summative – at the end of the process evaluation

	support, secular trends) influenced CP implementation? 9. What were the challenges of implementing CP at each site? 10. How did sites overcome these challenges? 11. What messages were used to convince local communities and leaders about the benefits of GPNC? 12. How was personal communication, involvement of stakeholders, CP adaptability, technical assistance and training, use of time, mediums through which to diffuse the intervention, skill transfer, and focus on sustainability used (or not used) through this scale-up endeavor?		CP coordinators and with facilitators; media analysis		

177

APPENDIX D: IMPLEMENTATION CRITERIA STANDARDS

1. Score the Essential Elements Survey: 0 points = This never happens, 1 point = This sometimes happens, 2 points = This always happens
    a. Up to 80-88 points possible for 40-44 items*

2. Score the observational checklist guide overall at each of the **three sites** based on the same criteria as #1: 0 points = This never happens, 1 point = This sometimes happens, 2 points = This always happens
    a. Up to 24 points possible for 12 items

3. Score the Educational Content Survey: 0 points = This never happens, 1 point = This sometimes happens, 2 points = This always happens
    a. Up to 90 points for 45 items

4. Add up the total score for each site and calculate the average implementation score for each site based on total applicable points possible (170-198)

5. The following are necessary criteria for implementation base on CHI standards and should always happen:
    i.   **Healthcare check-up** by a licensed clinical care provider during group time in a private corner in the same group space
    ii. **Patient self-care activities** including being trained to accurately assess their own blood pressure, weight, and BMI to contribute the information to their medical chart (or notebook)
    iii. **Groups conducted in a facilitative way**, rather than authoritative or didactic way by two trained facilitators

Does each site have at least 70% of the implementation criteria (187 points of 267 points possible at observation sites and 167 points of 239 points possible at non-observational sites)? (Note: Report discrepancies between observational scores and observation site self-reported scores.) *Four questions were optional based on site context regarding Spanish-speaking groups and the presence of students or other trainees.

APPENDIX E: BASELINE INTERVIEWS FOR STEERING COMMITTEES

Interviewers: Kristin Van De Griend & Deborah Billings

1) What does CenteringPregnancy mean to you?

2) What does it signify for your site

   a) In terms of practice and work flow

   b) In terms of how women (and families) are served

   c) In terms of birth outcomes, other outcomes

3) How many women, on average, are seen per month in your practice?

   a) About what % are eligible for Centering groups?

   b) Describe the women in terms of age, parity, race/ethnicity, etc.

4) Who do you think will be the Centering group facilitators? Explain why? What skills

   do they need?

5) Who on staff (no names-unless that seems warranted, just cadre) is extremely excited

   and supportive of incorporating Centering into your practice?

   a) What makes them excited or supportive?

   b) PROBE ON ADMINISTRATORS, NURSES, DOCTORS, STAFF

   c) # providers? # supervisors?

   d) What organizational norms and policies will facilitate

6) Who on staff (no names, just cadre) is putting up barriers or resisting

   a) What are the barriers or resistance

   b) PROBE ON ADMINISTRATORS, NURSES, DOCTORS, STAFF

179

c) What organizational norms and policies will hinder?

7) How do you think the practice will use the support named above?

8) How might it address the resistance?

9) What do you expect the biggest change in your practice to be?

10) What do you hope to see in terms of change in this practice with Centering?

11) How do you plan do to outreach to promote Centering?

Describe the Physical resources – private counseling space, private exam room,

equipment, protocols, information systems, etc.

APPENDIX F: SEMI-STRUCTURED GROUP INTERVIEW GUIDE

1. The training itself: Was it useful? Gaps? What's needed? Anything else about training?

2. Groups themselves: How are they going? How many has [site] done? What days/times do you meet? What have been facilitator experiences?

3. Describe recruiting of women and marketing.

4. Does your site use EMR? How is that working with groups? How about during mat check?

5. How is scheduling of groups and women/facilitators done here?

6. Any issues with billing? Reimbursement? (insurance/Medicaid mix of women)

7. Any major changes that you have had to make? (policies, flow of patients through system, professional lives)

8. How are you incorporating residents into this process?

9. Steering committees: How is this going? Are meetings happening? How can that be strengthened? Do you need any help with that?

10. Regarding the time it takes, do you feel like there is a transition toward readjusting schedules, especially coordinating groups? Do you have the time, or is it extra and on top?

11. Some sites mentioned that they hoped their practice would get new patients based on Centering. Has that happened here?

12. Are there any questions you have for us?

APPENDIX G: INDIVIDUAL AND GROUP INTERVIEW QUESTIONS

Interviewers: Kristin Van De Griend, Deborah Billings, and Sarah Kelley

(Adapted from King et al., 1987)

1. **Intervention context:** Where has each intervention been implemented? What are these locales and communities like in general? From where do participants come? Describe population characteristics: economic characteristics of setting, occupations of people in the locale, and proportion of families on welfare. Is there any group in the community that is particularly powerful or strongly influences CP? Describe each site, clientele, and trends.

2. **Physical space:** Describe physical description of sites. Does Centering have priority for use of the space; other uses do not hinder Centering scheduling? Is the space sufficient size for a group of at least 10 mothers, their support people, and Centering staff to comfortably sit in a circle, with additional room for assessment? Is the space comfortable and inviting to participants?

3. **Stakeholders:** What are key actors in the intervention like? How do they feel? Why did they become involved? Are there accountability issues?

4. **Intervention origins and history:** Is there evidence of CP success or failure previously. How did it start? Who was instrumental? Who chose it? Was a formal/informal needs assessment conducted prior to implementing group prenatal care at each site?

5. **Intervention rationale, goals, and objectives:** Describe each site's objectives related to group prenatal care in detail. What are the underlying goals?

6. **Personnel:** Describe the kinds and numbers of staff involved. Describe the roles and job descriptions related to group prenatal care. Describe the procedures used for selecting staff. Describe their training related to group prenatal care. Do they believe the training provided by CHI was adequate? Describe the processes for developing and maintaining staff morale. Has there been turnover since basic facilitation training? Why? Has that affected intervention functioning? How much time does each staff role devote to responsibilities? How do outside individuals participate in CP?

7. **CP participants:** Is group prenatal care serving the individuals it was meant to? How are participants selected? How are they grouped? Describe the background characteristics of participants at each site.

8. **Administrative arrangements:** How is CP administered? By whom? What offices or roles have been created or expanded? Is this different from usual practice?

9. **Planned intervention characteristics:** Has the intervention been implemented at every site as planned and as patients expected? Has the intervention been delivered to the patients for whom it was planned (i.e., primarily Medicaid)? What planning or problem-solving meetings occur (e.g., steering committee meetings and other stakeholder meetings) to help remedy the intervention or share successes?

10. **Intervention facilities and materials:** Do sites feel that CP materials fit the sites' goals/objectives? What intervention materials does each site actually use and how (from CP)? Which materials must be replaced and how often? Do sites have all of the materials they need? What is cost of materials per group? Per person? Were they delivered in time? What evaluation procedures has each site developed? What evidence is there that facilitators and participants found materials interesting, stimulating, or useful? What other materials were used to support the intervention and how? Who provided them?

11. **Intervention activities:** How does each activity fit the site's goals/objectives? What activities do sites typically do in each session from the CP manual? Which activities do each site choose not to do in each session? How much variation has there been from site to site and over time? What do activities look like in practice? What evidence is there that activities are interesting and valuable to participants and facilitators? Do patients feel CP could be improved?

APPENDIX H: SURVEY FOR FACILITATORS: ESSENTIAL ELEMENTS

EVALUATION

Essential Elements Evaluation

Welcome to the CenteringPregnancy Essential Elements Survey
You are being asked to participate in an evaluation about the implementation of
CenteringPregnancy group prenatal care in South Carolina because you are a group
facilitator.

Please complete this survey by Friday, September 26, 2014. It should take approximately
20 minutes to complete.

The questions in this survey are the same questions asked on the Centering Counts
Essential Elements data form. You may keep track of your answers so that you can use
the same answers on your Centering Counts form when your clinic is ready to submit
that data to the Centering Healthcare Institute.

The Institutional Review Board of the University of South Carolina has reviewed this
study for the protection of the rights of human participants in research studies, in
accordance with federal and state regulations. If you have any questions about this
survey, please contact Kristin Van De Griend, the study coordinator, by telephone at 319-
594-0565 or by email at vandegrk@email.sc.edu. The data from this survey will be
used to understand how sites are implementing CenteringPregnancy. Your name will not
appear with answers to your questions. No staff, administrators, or persons affiliated with
your practice will have access to your survey information. There are no more than
minimal risks to participating in this study. You may feel somewhat inconvenienced by
the time and effort it takes to participate in the interview.

Thank you for your time. Your answers are important for the expansion process
of CenteringPregnancy in South Carolina.

Many thanks,
Kristin

2. Health assessments (check-ups) occur within the group space.

Thinking back to all of the CenteringPregnancy sessions you have facilitated during 2014, please choose the single best answer for each statement and click your corresponding answer.

1. Assessments occur within the group space.

○ This never happens

○ This sometimes happens

○ This always happens

2. Assessment area is set-up to ensure privacy.

○ This never happens

○ This sometimes happens

○ This always happens

3. Music is used to enhance clients' privacy during assessments.

○ This never happens

○ This sometimes happens

○ This always happens

4. (Optional) Please offer any additional comments you have on health assessments in the group space.

3. Women are involved in self-care activities.

Thinking back to all of the CenteringPregnancy sessions you have facilitated during 2014, please choose the single best answer for each statement and click your corresponding answer.

5. Women are active participants in collecting indicators of their own health (including blood pressure and weight).

○ This never happens

○ This sometimes happens

○ This always happens

6. Women record their health findings (e.g. weight) in at least one of the following ways- electronically, in a paper record, or in the Mom's Notebook.

○ This never happens

○ This sometimes happens

○ This always happens

7. Women are able to see their own health information if and when they want to access it.

○ This never happens

○ This sometimes happens

○ This always happens

8. (Optional) Please offer any additional comments you have on women's involvement in self-care activities.

4. A facilitative leadership style is used.

Thinking back to all of the CenteringPregnancy sessions you have facilitated during 2014, please choose the single best answer for each statement and click your corresponding answer.

9. Facilitators guide but do not control the discussion.
○ This never happens
○ This sometimes happens
○ This always happens

10. Groups are interactive and women voluntarily share information, ideas, personal feelings, or experiences.
○ This never happens
○ This sometimes happens
○ This always happens

11. Facilitators refer to the group for question answering.
○ This never happens
○ This sometimes happens
○ This always happens

12. Facilitator Self-Assessment Sheets are used.
○ This never happens
○ This sometimes happens
○ This always happens

13. Facilitators wear lab coats.
○ This never happens
○ This sometimes happens
○ This always happens

14. (Optional) Please offer any additional comments you have on facilitative leadership style.

187

5. Each session has an overall plan.

Thinking back to all of the CenteringPregnancy sessions you have facilitated during 2014, please choose the single best answer for each statement and click your corresponding answer.

15. Leaders use the CenteringPregnancy materials to determine the overall plan.

◯ This never happens

◯ This sometimes happens

◯ This always happens

16. English-speaking women in the group use Centering Notebooks.

◯ This never happens

◯ This sometimes happens

◯ This always happens

17. Spanish-speaking women in the group use Centering Notebooks.

◯ This never happens

◯ This sometimes happens

◯ This always happens

◯ Not applicable (we do not have Spanish-speaking women in groups)

18. Facilitator Process Evaluations help guide session planning.

◯ This never happens

◯ This sometimes happens

◯ This always happens

19. (Optional) Please offer any additional comments you have on overall session plans.

Thinking back to all of the CenteringPregnancy sessions you have facilitated during 2014, please choose the single best answer for each statement and click your corresponding answer.

20. Core content is addressed in the sessions.

○ This never happens

○ This sometimes happens

○ This always happens

21. Content discussed in each session is documented and reviewed regularly.

○ This never happens

○ This sometimes happens

○ This always happens

22. (Optional) Please offer any additional comments you have on attention to core content.

Thinking back to all of the CenteringPregnancy sessions you have facilitated during 2014, please choose the single best answer for each statement and click your corresponding answer.

23. The facilitator and co-facilitator are present in the circle throughout the session.

○ This never happens

○ This sometimes happens

○ This always happens

24. The facilitators are consistent throughout all sessions.

○ This never happens

○ This sometimes happens

○ This always happens

25. There is a plan for emergency backup for facilitators.

○ This never happens

○ This sometimes happens

○ This always happens

26. Professional students, residents, or training staff who are part of the group are supervised.

○ This never happens

○ This sometimes happens

○ This always happens

○ Not applicable (we do not allow students to be part of the group)

27. The same professional students, residents, or training staff participate for all sessions of one group.

○ This never happens

○ This sometimes happens

○ This always happens

○ Not applicable (we do not allow students to be part of the group)

28. (Optional) Please offer any additional comments you have on stability of group leadership.

190

Thinking back to all of the CenteringPregnancy sessions you have facilitated during 2014, please choose the single best answer for each statement and click your corresponding answer.

29. Group guidelines are posted in the space.

○ This never happens

○ This sometimes happens

○ This always happens

30. Participants sign a confidentiality agreement.

○ This never happens

○ This sometimes happens

○ This always happens

31. Leaders' facilitation allows for different levels of participation by group members.

○ This never happens

○ This sometimes happens

○ This always happens

32. If it is needed, language translation is available.

○ This never happens

○ This sometimes happens

○ This always happens

○ Not applicable (language translation has not been needed)

33. (Optional) Please offer any additional comments you have on group conduct.

191

9. The group is conducted in a circle.

Thinking back to all of the CenteringPregnancy sessions you have facilitated during 2014, please choose the single best answer for each statement and click your corresponding answer.

34. All group participants sit in the circle (there are no "observers" outside the circle).

○ This never happens

○ This sometimes happens

○ This always happens

35. Centering space is private and conducive to group sharing.

○ This never happens

○ This sometimes happens

○ This always happens

36. Seating is around an open space that allows for activities.

○ This never happens

○ This sometimes happens

○ This always happens

37. We wait to start the formal "circle up" of the group until all facilitators and participants are in the circle.

○ This never happens

○ This always happens

○ This sometimes happens

38. (Optional) Please offer any additional comments you have on how groups are conducted.

192

10. The composition of the group is stable, but not rigid.

Thinking back to all of the CenteringPregnancy sessions you have facilitated during 2014, please choose the single best answer for each statement and click your corresponding answer.

39. Women are assigned to a group cohort and remain with that group throughout their pregnancy.

○ This never happens

○ This sometimes happens

○ This always happens

40. New women may join an existing group cohort for any remaining sessions.

○ This never happens

○ This sometimes happens

○ This always happens

41. (Optional) Please offer any additional comments you have on the composition of groups.

[text box]

11. Group size is optimal to promote the process.

Thinking back to all of the CenteringPregnancy sessions you have facilitated during 2014, please choose the single best answer for each statement and click your corresponding answer.

42. Groups are between 8-12 women.

○ This never happens

○ This sometimes happens

○ This always happens

43. There are more than 1-2 students, residents, or other staff in training in group sessions.

○ This never happens

○ This sometimes happens

○ This always happens

○ Not applicable (we do not allow students, residents, or other staff)

44. (Optional) Please offer any additional comments you have on group size.

[text box]

Thinking back to all of the CenteringPregnancy sessions you have facilitated during 2014, please choose the single best answer for each statement and click your corresponding answer.

45. Group cohort has a plan regarding involvement of support people.

○ This never happens

○ This sometimes happens

○ This always happens

46. Support people are stable and do not change from session to session.

○ This never happens

○ This sometimes happens

○ This always happens

47. Children are present during the formal "circle up" discussion.

○ This never happens

○ This sometimes happens

○ This always happens

48. (Optional) Please offer any additional comments you have on involvement of support people.

13. Opportunity for socializing within the group is provided.

Thinking back to all of the CenteringPregnancy sessions you have facilitated during 2014, please choose the single best answer for each statement and click your corresponding answer.

49. Snacks are provided at each group session.

○ This never happens

○ This sometimes happens

○ This always happens

50. Group members wear name tags.

○ This never happens

○ This sometimes happens

○ This always happens

51. Socializing time is unstructured.

○ This never happens

○ This sometimes happens

○ This always happens

52. (Optional) Please offer any additional comments you have on socializing within the group space.

---

14. There is ongoing evaluation of outcomes.

Thinking back to all of the CenteringPregnancy sessions you have facilitated during 2014, please choose the single best answer for each statement and click your corresponding answer.

53. Site is recording group data and outcomes through Centering Counts.

○ This never happens

○ This sometimes happens

○ This always happens

54. (Optional) Please offer any additional comments you have on outcome evaluations.

Thinking back to all of the CenteringPregnancy sessions you have facilitated during 2014, please choose the single best answer for each statement and click your corresponding answer.

55. Centering has priority for use of the space; other uses do not hinder Centering scheduling.

○ This never happens

○ This sometimes happens

○ This always happens

56. Space is of sufficient size for a group of at least 10 mothers, their support people, and Centering staff to comfortably sit in a circle, with additional room for assessment.

○ This never happens

○ This sometimes happens

○ This always happens

57. The space is comfortable and inviting to participants.

○ This never happens

○ This sometimes happens

○ This always happens

58. (Optional) Please offer any additional comments you have on your space.

16. Optional Comments.

59. Do you have any other comments, questions, or concerns?

Educational Content Survey for CenteringPregnancy

You are being asked to participate in this evaluation of what is most and least helpful regarding the educaitonal content for patients in CenteringPregnancy because you are a group facilitator.

Please complete this survey by Friday, December 5, 2014. It should take less than 10 minutes to complete.

The Institutional Review Board of the University of South Carolina has reviewed this study for the protection of the rights of human participants in research studies, in accordance with federal and state regulations. If you have any questions about this survey, please contact Kristin Van De Griend, the study coordinator, by telephone at 319-594-0565 or by email at vandegrk@email.sc.edu. The data from this survey will be used to understand how sites are implementing CenteringPregnancy. Your name will not appear with answers to your questions. No staff, administrators, or persons affiliated with your practice will have access to your survey information. There are no more than minimal risks to participating in this study. You may feel somewhat inconvenienced by the time and effort it takes to participate in the interview.

Thank you for your time. Your answers are important for the expansion process of CenteringPregnancy in South Carolina!

Many thanks,
Kristin

Think back to the groups you facilitated throughout 2014. Please choose the best option for how often you *cover each topic at least one time* throughout all 10 sessions of a Centering group.

1. How often do you cover the following topics (from Session 1) at least one time throughout all 10 sessions of a Centering Group?

	Never	Sometimes	Always
Group expectations, guidelines, confidentiality	○	○	○
Prenatal testing	○	○	○
Nutrition	○	○	○
Size your servings	○	○	○
Food diary	○	○	○
Healthy lifestyle choices	○	○	○

Other (please specify)

[   ]

2. How often do you cover the following topics (from Session 2) at least one time throughout all 10 sessions of a Centering Group?

	Never	Sometimes	Always
Body changes in pregnancy	○	○	○
Common discomforts	○	○	○
Taking care of your back	○	○	○
Healthy gums and teeth	○	○	○

Other (please specify)

[   ]

3. How often do you cover the following topics (from Session 3) at least one time throughout all 10 sessions of a Centering Group?

	Never	Sometimes	Always
Mental relaxation	○	○	○
Breastfeeding my baby	○	○	○
The familly I want to have	○	○	○

Other (please specify)

[   ]

4. How often do you cover the following topics (from Session 4) at least one time throughout all 10 sessions of a Centering Group?

	Never	Sometimes	Always
Thinking about my family	○	○	○
Family planning	○	○	○
Sexuality	○	○	○
Domestic violence and abuse	○	○	○
Fetal brain development	○	○	○
Preterm labor	○	○	○

Other (please specify)

[   ]

5. How often do you cover the following topics (from Session 5) at least one time throughout all 10 sessions of a Centering Group?

	Never	Sometimes	Always
Labor	○	○	○
Birth facility	○	○	○
Breathing	○	○	○
Medications for labor and birth	○	○	○
Early labor - when to call	○	○	○

Other (please specify)

[   ]

6. How often do you cover the following topics (from Session 6) at least one time throughout all 10 sessions of a Centering Group?

	Never	Sometimes	Always
The birth experience	○	○	○

Other (please specify)

[   ]

7. How often do you cover the following topics (from Session 7) at least one time throughout all 10 sessions of a Centering Group?

	Never	Sometimes	Always
The newborn's first days	○	○	○
Planning pediatric care	○	○	○
Caring for your baby	○	○	○
Circumcision	○	○	○
Brothers and sisters	○	○	○
Newborn - when to call	○	○	○

Other (please specify)

[   ]

8. How often do you cover the following topics (from Session 8) at least one time throughout all 10 sessions of a Centering Group?

	Never	Sometimes	Always
Pregnancy to parenting transition	○	○	○
Kick counts	○	○	○
Emotional adjustments	○	○	○
Baby blues	○	○	○
Postpartum depression	○	○	○
Pregnancy - when to call	○	○	○

Other (please specify)

[   ]

9. How often do you cover the following topics (from Session 9) at least one time throughout all 10 sessions of a Centering Group?

	Never	Sometimes	Always
Putting it all together	○	○	○
Newborn safety	○	○	○
Infant massage	○	○	○

Other (please specify)

[   ]

10. How often do you cover the following topics (from Session 10) at least one time throughout all 10 sessions of a Centering Group?

	Never	Sometimes	Always
Newborn care	○	○	○
Growth and development - the first month	○	○	○
Home and family changes	○	○	○
Newborn - when to call	○	○	○
Mom postpartum - when to call	○	○	○

Other (please specify)

[   ]

11. What topics are *most important* for you to cover with women in your groups?

[   ]

12. What topics are *least important* for you to cover with women in your groups?

[   ]

13. Please offer any other comments, questions, or concerns you have about CenteringPregnancy educational content.

APPENDIX J: OBSERVATIONAL VISIT GUIDE

Did the following occur before, during, or after the group session? Qualitatively, describe in detail, noting how often it occurs if applicable. Was this different from previous sessions?

1. Health assessment occurs within group space

2. Participants are involved in self-care activities

3. A facilitative leadership style is used

4. The group is conducted in a circle

5. The session followed an overall plan

6. Attention is given to the core content although emphasis may vary

7. There is stability of group leadership

8. Group conduct honors the contribution of each member

9. Composition of the group is stable, not rigid

10. Group size is optimal to promote the process

11. Involvement of support people is optional

12. Opportunity for socializing with the group

13. *Ongoing evaluation of outcomes (not applicable for group observations)*

Post-observation: Did the group meet for all 10 sessions?

Consent Letter for CenteringPregnancy Evaluation

Title: Scaling up CenteringPregnancy in South Carolina

Investigator's name(s): Dr. Deborah Billings, Kristin Van De Griend, Noël Marsh, Sarah Kelley

Introduction
You are being asked to participate in a research study about the implementation and scaling up of CenteringPregnancy group prenatal care in South Carolina because you are involved in or know about this process. The Institutional Review Board of the University of South Carolina has reviewed this study for the protection of the rights of human participants in research studies, in accordance with federal and state regulations. Before you choose to be a research participant, it is important that you read the following information and ask as many questions as necessary to be sure that you understand what your participation will involve.

Purpose
The purpose of this study is to understand the process of implementing and scaling up CenteringPregnancy group prenatal care to established healthcare practices in South Carolina. For this purpose, we would like to interview health providers, clinic staff and/or administrators, community leaders, and other stakeholders.

Methods and Procedures
You will be asked questions about your perceptions and experiences with CenteringPregnancy, and your thoughts on its implementation. There are no right or wrong answers to the interview/focus group questions. I may take notes by hand during the course of the interview. In order to capture all of the information in this interview, and to help me listen to you in the best way possible, this interview will be audio recorded with your permission. Your name and contact information will not be recorded. If you give us permission to record the interview, your recording will be stored on a password-protected computer until the project is over. Once the project is over, the recording will be destroyed. Your name and identity will be kept confidential.

Risks and Benefits

There are no more than minimal risks to participating in this study. You may feel somewhat inconvenienced by the time and effort it takes to participate in the interview. If there are questions that make you uncomfortable, you do not need to answer them.

There is no direct benefit for your participation. You will not be compensated for participating. If you participate, your participation will help us better understand the process of implementing and scaling up CenteringPregnancy prenatal care at the state level. This knowledge may assist other practices who expand their services in the future to include CenteringPregnancy. Therefore, you may find an indirect benefit in knowing you participated in a study that will contribute to the body of knowledge around CenteringPregnancy and its expansion into various healthcare practices.

Voluntary Participation
Participation in this study is completely voluntary. You may refuse to participate or to withdraw at any time, for whatever reason, without negative consequences. You do not need to answer any question that you do not want to answer.

Confidentiality
We will make every effort to protect your privacy. Your name will not appear with answers to your questions or on the audio recording. No staff, administrators, or persons affiliated with your practice will have access to your interview information. Your answers will be kept in a locked cabinet or on password protected computers in a locked office. Your name and practice/employer will never be presented in any reports or publications.

Contact for Questions
For more information concerning this study, or to ask further questions, give comments, or express concerns, you may contact Dr. Deborah Billings at billindl@mailbox.sc.edu or Kristin Van De Griend at vandegrk@email.sc.edu. You may contact the USC Office of Research Compliance at (803) 777-7095, or Director, Thomas Coggins at tcoggins@mailbox.sc.edu.

APPENDIX L: MEDIA EXAMPLES

OB Centering

What is Centering Pregnancy?
Centering pregnancy groups provide a dynamic atmosphere

APPENDIX M: MEDIA SOURCES

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