

# PRACTICES

A PUBLICATION OF THE CENTER FOR MATERNAL & INFANT HEALTH | FALL 2007

## INSIDE

This issue focuses on interconception health - maternal health after and in-between pregnancies. Articles cover issues such as mental health, weight, genetics, recurrence risk, family support, care coordination and more. It also includes resources for your practice.

## Why Interconception Care Matters

**Merry-K. Moos, RN, FNP, MPH, FAAN**

*UNC Department of OB/GYN, Division of Maternal Fetal Medicine*

Over the last twenty years, a quiet but persistent energy to change the perinatal prevention paradigm has taken hold in this country. This initiative, known as preconceptional health promotion, was largely pioneered in North Carolina. While the American College of Obstetricians and Gynecologists (ACOG) and the American Academy of Pediatrics (AAP) have long been proponents for reducing poor pregnancy outcomes by addressing a woman's risk factors before pregnancy, the shift in focus of the perinatal prevention paradigm from prenatal to prepregnancy recently received a major boost. In 2005, the Centers for Disease Control and Prevention convened a Select Panel on Preconceptional Health to develop recommendations to improve the health of women and couples before conception of a first or subsequent pregnancy.

The Select Panel put forth four goals:

1. Improve knowledge, attitudes and behaviors of men and women related to preconception health.
2. Assure that all women of childbearing age receive preconception care services.
3. Reduce risks identified by a previous poor pregnancy outcome.
4. Reduce disparities in pregnancy outcomes.

The opportunity to meet the third goal, addressing risks identified in a previous pregnancy, is especially great because it can be achieved without significant social marketing, societal expenditures or reordering of the health care system. The first step in meeting this goal is to take advantage of the visits women already make and to deliberately and thoroughly review the prior reproductive history to identify risks that surfaced—not only for future pregnancies but also for the woman's own short and long-term health. Unfortunately, missed opportunities abound. The following examples illustrate.

- Ms. Martin developed gestational diabetes mellitus (GDM) during her pregnancy which ended with the birth of a healthy 9 pound male infant. She began prenatal care with a BMI of 31, and she gained 40 pounds during gestation. Records from her postpartum exam reveal no discussion of her risks for developing Type I diabetes, calculation of her BMI, opportunities for decreasing her risks or measurement of her postpartum glucose levels.
- Ms. Smith presented to her OB/GYN office to initiate prenatal care and is assessed to be about 8 weeks gestational age. She delivered her first child 6 years ago with this practice and feels confident in the services provided. She has her annual well-woman exams with this same group. Her first pregnancy ended with the birth of a near-term infant with an open neural tube defect. The child has resulting paraplegia but is doing well. At this first prenatal visit, she indicates she has not been on high dose folic acid (4.0 mg) because no one ever talked with her about this. The alarmed provider reviews all of the notes in her record and finds none that indicate any information had ever been given about the risk for recurrence of a neural tube defect or opportunities to reduce the risk.
- Ms. Thomas had an infant born 9 months ago who was premature weighing 1950 grams (4.3 pounds). The baby has done very well. During prenatal care, it was noted that the patient had a BMI < 19 and that she smoked 1 1/2 packs per day. She was able to decrease tobacco use to 1–2 cigarettes per day by the end of her pregnancy. Ms. Thomas missed her postpartum exam because of the demands of caring for her infant. She eventually made a visit for contraceptive care at approximately 4 months following birth. Documentation from this visit included a smoking assessment (she reported

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smoking 1 pack per day); no BMI was calculated and nothing is included to indicate provider awareness of the preterm delivery, risks of recurrence, strategies to reduce the risk or specific assessments and interventions around her tobacco use.

Through their previous pregnancy experiences, Ms. Martin, Ms. Smith and Ms. Thomas declared many risks, and yet the care they received did not build on known opportunities to help them minimize risks to their own health or to the health of future pregnancies or offspring.

Pregnancy has been identified as “a stress test for life” because it can predict a woman’s later health. Pregnancy can reveal risks for developing cardiovascular disease, diabetes mellitus, thyroid and pituitary disorders, liver and renal disease, depression and thrombosis. Recognition of these risks can, and should, inform the follow-up testing, counseling and care that women receive. Attending to a woman’s health status can impact her health, as well as the health of her future offspring. Follow-up of the diagnosis GDM provides a good example.



Because 10% of women whose pregnancies were complicated by GDM will meet the criteria for Type II diabetes soon after delivery, the American Diabetes Association (ADA) recommends reassessment of maternal glycemic status at least 6 weeks postpartum. However, a recent report found that only 37% of women with GDM were screened, with a mean time from delivery to testing of 428 days. By comparison, 94% of women had a pap test with a mean time from delivery to testing of 49 days. The results of a missed diagnosis can be severe including hyperglycemic crises and related morbidities as well as the risk of fetal anomalies should a pregnancy be conceived before treatment is initiated. This risk is approximately 3 times greater than the rate of 3% for all women. This risk could be nearly eliminated by a thorough review of a woman’s previous reproductive history and the achievement of an optimal hgbA1c prior to conception for women with Type II diabetes. Ms. Martin needs to be tested—she also needs help in addressing her high BMI in order to reduce the risk or severity of future disease.

Birth defects are devastating outcomes for many parents. The risk of recurrence can be calculated through appropriate testing, when available, and a thorough review of the family’s history and supplementary information by genetic counselors or others especially trained to obtain and analyze the relevant data. Families who have experienced the birth of a child with an anomaly should be offered counseling prior to their next pregnancy so that they can understand the risks of recurrence in future pregnancies and can begin to consider their options if the risk is higher than they are comfortable accepting. Some recommendations to prevent recurrences are standards of care. For instance, Level A evidence exists regarding the care of women who have had a previous pregnancy with an NTD: 4 mg of folic acid supplementation per day is recommended from one

month before until 3 months after conception. Without supplementation, the risk of recurrence is 2-3%. That Ms. Smith and her provider are alarmed is understandable and appropriate, but it was avoidable.

A prior preterm delivery is one of the best predictors of a future preterm birth—one previous preterm delivery has a 15% risk for recurrence; women with two previous preterm deliveries have a 41% recurrence risk. Many known contributors to prematurity precede conception. These include tobacco use, short interconceptional lengths, unintended pregnancy, low or high BMIs, and chronic diseases. Once pregnancy occurs, most of these risks cannot be altered. By thoroughly assessing Ms. Thomas’s previous reproductive history, her provider would have been able to discuss the risk of recurrence as well as the benefits of smoking cessation, achieving an optimal weight, spacing her pregnancies at optimal distances and potential benefits of 17 alpha hydroxyprogesterone caproate (17P) should she conceive again. Without any recognition of Ms. Thomas’s recent stresses or the outcome of her pregnancy, it is hard to imagine she received care that was personalized to her needs, benefited her short and long-term health needs or the health of her future children.

Interconceptional care does not require working harder—it starts by taking advantage of the visits and information we already have to screen women for the risks that surfaced in their previous gestations and by acting on those risks through appropriate testing, individualized counseling and indicated referrals. Recognizing each pregnancy as a screening test for future health—the woman’s and her offspring’s—is an excellent starting place for all who provide health care to women of childbearing potential. •

*References available on request of the author at [mkmoos@med.unc.edu](mailto:mkmoos@med.unc.edu)*

## DID YOU KNOW?

Women who have had a previous, spontaneous, singleton preterm birth (<37<sup>0</sup> weeks) can reduce their risk of recurring preterm birth by 33%. Weekly injections of 17 alpha hydroxyprogesterone caproate (17P) beginning at 16 weeks gestation can reduce the risk of prematurity for a third of high-risk women. It can also help gain valuable weeks at a time in gestation when every day matters.

In North Carolina, Medicaid reimburses for 17P treatment. Eligible women who are uninsured may receive 17P free of charge thanks to the North Carolina General Assembly.

Questions? Visit [www.mombaby.org](http://www.mombaby.org) or contact the 17P Project Coordinator Sarah Verbiest at 919-843-7865 or at [sarahv@med.unc.edu](mailto:sarahv@med.unc.edu).

## P4 SERVICES

Mothers of NICU babies receive:

- Medical care and advice for immediate postpartum health concerns
- Health assessment and discharge letter to provider with specific suggestions for postpartum visit follow up
- Assistance in scheduling her postpartum visit / encouragement to keep her postpartum visit / opportunity to have her appointment with the P4 coordinator
- Follow up contact after post postpartum visit
- A wellness kit with health information tailored to her needs at 3 months postpartum
- Follow up contact at 8 weeks, 3 months, 6 months, 9 months and a year

Mothers with high-risk conditions receive the services mentioned above and:

- Monthly calls/visits
- Targeted intervention and resources to address specific health issues



## Taking Care of Moms: The UNC Postpartum Plus Prevention Program

*Sarah Verbiest, MSW, MPH*  
UNC Center for Maternal and Infant Health

For many women, pregnancy provides increased interaction with the medical community. Prenatal care may highlight medical risk factors or unhealthy behaviors that have not been recognized or addressed in the past. During pregnancy, health education and support targeting these issues is often provided. The postpartum period provides a critical opportunity for reinforcement of positive health changes made during pregnancy as well as reassessment of chronic conditions and health concerns. During this period women may also have new health concerns, including depression, unintended pregnancy, weight gain, return to substance use, inactivity, incontinence, exhaustion, anemia, social isolation, and more. Research has demonstrated that mothers who have poor birth outcomes are at even greater risk for postpartum complications and health problems.

The Postpartum Plus Prevention Program (P4) was created in January 2007 to begin to address these needs. The program focuses on mothers whose infants require care in the UNC intensive care nursery (NICU). The project is guided by a diverse group of talented professionals and consumers. This advisory council has been essential, as the project has moved through relatively uncharted waters in providing care to this group of women. Services are provided by Suzanne Shores, a certified nurse midwife. Ms. Shores has experience working with diverse populations of women as well as providing comprehensive prenatal and women's health care.

P4 services are offered to all mothers of infants receiving care in the NICU. The P4 coordinator is available to provide medical care and referral to any mother in the nursery who requires assistance. A smaller group of women with identified high-risk medical conditions for recurring premature birth receives more intensive intervention. This group includes mothers who have experienced an infant demise. Bilingual members of the Center for Maternal and Infant Health team partner with the P4 coordinator to assist in outreach and follow up with Spanish language patients. Program materials were designed to focus on two phases of adaptation – the weeks up to the

6-8 week postpartum visit, and three months to the first year postpartum. Materials may be viewed online at [www.mombaby.org](http://www.mombaby.org). The program also uses interconception brochures and magazines from the March of Dimes and NC Healthy Start Foundation.

The P4 program aims to improve the health of mothers. Women with high-risk infants tend to focus all their attention on their baby with little thought to their own well-being. This program hopes to remind mothers that their health matters too. It seeks to increase the use of 17P where appropriate in subsequent pregnancies, increase referral for maternal depression, encourage / support pregnancy spacing and intendedness, promote continuity of wellness care, and address specific maternal risk factors for recurring poor birth outcomes. Ultimately, the project hopes to improve the health of mothers and take steps to reduce their risk for recurring poor birth outcomes.

The P4 Program is funded by the March of Dimes with additional support from the UNC Department of OB/GYN and the Office of the Dean of the UNC School of Medicine. •



# Postpartum Depression & Mothers of Premature Infants: What We Know, What We Don't, and What We Can Do

**Samantha Meltzer-Brody, MD, MPH**  
*UNC Perinatal Psychiatry Program*

Under the best of circumstances, the postpartum period is a challenging time. However, women who deliver preterm infants usually have additional stressors that make the postpartum period especially difficult and increase the rates of postpartum mental health complications, including depression and anxiety. Perinatal depression, defined as depressive episodes that occur either during pregnancy or within the first 6 months postpartum, can have devastating consequences for both the woman experiencing it, as well for her children and family. In the general population, postpartum depression has a prevalence rate of approximately 10%, making it one of the most common complications of both the prenatal and postpartum period. Although the number of studies is limited, women who have experienced preterm birth have much higher rates of anxiety and depression (prevalence rate of depression of at least 50%) during the first 6 months postpartum. Identified risk factors include the mother's past psychiatric history, previous perinatal loss, psychosocial support including marital status, severity of the infant's health status, and degree of worry and coping skills in the mother. Also, women whose preterm infants require rehospitalization after the initial stay are at risk for more severe symptoms overall.



In addition to the risk of postpartum depressive disorders in this population, a few studies have looked at rates of posttraumatic stress disorder (PTSD) in women with preterm infants. In particular, two studies have described a correlation between PTSD symptoms and preterm delivery, and there is a larger literature describing PTSD symptoms in women who have had a "traumatic" birth experience. It is important to note that PTSD and depression are often co morbid, and a thorough psychiatric interview is needed to

clearly define what psychiatric symptoms are most difficult for the mother and to help direct treatment strategies.

Historically, it has been difficult to integrate obstetrical, mental health and neonatal care for women with pregnancy complications, including preterm delivery. As Dr. Halbreich stated in 2005 in the American Journal of Obstetrics and Gynecology, "the multiple clinical and research disciplines that are concerned with the various aspects of pregnancy delivery and the postpartum period are not conceptually nor practically integrated." The obstetrical providers have been concerned with delivery complications, the mental health professionals with postpartum depression, and the neonatologists with the health of the preterm infant. Over the last decade, there has been a call for "an interdisciplinary approach" which is desperately needed in order to provide appropriate mental health interventions for the mother, develop a better understanding of maternal-infant developmental processes and to implement assessments and interventions that may prevent adverse long-term impact on the family.

### What we can do:

- Women with preterm infants should have a routine screening for maternal psychological distress, including depression and anxiety symptoms. There are effective treatments for postpartum psychiatric symptoms including both psychopharmacologic and psychotherapeutic treatment modalities. Thus, prompt screening and the implementation of effective treatments are critical. Furthermore, there are well studied and validated instruments for depression available. These include easy-to-administer patient rating scales like the Edinburgh Postnatal Depression Scale (EPDS) or

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## WHAT WOMEN SAY...

Awareness is not enough to change behaviors. Knowledge of family history, family support and healthcare options are needed to facilitate behavior change.

Emotional, physical and financial stress can negatively influence a women's health. Women expressed a need for more social support and networking.

Issues such as depression are especially significant. There is a lack of resources in communities to address mental health problems.

There are many barriers to health care. These include cost, access to facilities, racism, and lack of childcare and transportation. Groups of women also highlighted a mistrust of health care providers and reported a lack of respect on the part of those providers for their patients.

Women prefer a holistic approach to health care. They want to have their mental, physical and spiritual health addressed.

Many women reported they knew someone struggling with drug addiction. Women commented that drugs were a coping mechanism for extreme stress.

Women are concerned about becoming pregnant but don't use contraception. Some women report inconvenient clinic hours and quality of care problems with family planning services.

*Sources*  
*What New Mothers Say: Personal Comments from the North Carolina PRAMS Survey, NC DHHS SCHS, May 2007*

*Latina Infant Mortality Awareness Project, NC Healthy Start Foundation, April 2007*

*Women's Health: Attitudes and Practices in North Carolina – Focus Group Research, NC SIM Collaborative/NC Healthy Start Foundation, June 2005*

*Uncovering Community Voices: A Catalog of Qualitative Data Regarding Women's Health in North Carolina 1995 – 2005, UNC MCH 315 Spring 2005 Class with Supervision from UNC Sheps Center & UNC Center for Maternal and Infant Health*

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Center for Epidemiologic Studies Depression Scale (CES-D) as well as more comprehensive clinician rated scales like the MINI International Neuropsychiatric Interview. One advantage of the Edinburgh is that it contains multiple questions about anxiety symptoms that are often a very prominent feature of postpartum depressive syndromes.

- Because most mothers with preterm infants will spend a significant amount of time visiting their babies in neonatal intensive care units, we should consider ways that mental health services and screening for the mothers be brought into the NICU setting. This is an opportunity for innovative screening and treatment strategies for mothers of preterm birth infants.
- In addition, mental health follow-up care needs to continue throughout the first year of life (or longer). In order to form integrated models of care, it is critical that good relationships be developed among providers in the areas of obstetrics, mental health, and neonatology/pediatrics. This will allow for the development of innovative assessment and treatment strategies to help the mother-infant dyad throughout the difficult first year and beyond after a preterm delivery. •

#### Sources

Miles MS, Holditch-Davis D, Schwartz TA, Scher M. 2007 Depressive symptoms in mothers of prematurely born infants J Dev Behav Pediatrics 28(1):36-44.

Holditch-Davis D, Bartlett TR, Blickman AL, Miles MS. 2003 Posttraumatic Stress symptoms in mothers of premature infants. J Obstet Gynecol Neonatal Nurse; 32(2):161-71.

Halbreich U 2005. The association between pregnancy processes, preterm delivery, low birth weight and postpartum depression—the need for interdisciplinary integration. Am J Obstet Gynecol; 193(4): 1312-22.

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[www.getfolic.com](http://www.getfolic.com)

## THE FAMILY SUPPORT PROJECT: A PARTNERSHIP FOR FAMILIES

The March of Dimes introduced the NICU Family Support Program to help alleviate the emotional distress and confusion common to families whose baby is born early and/or with a serious medical condition. The program is built upon a family-centered philosophy and is customized based on the family and staff needs of the specific NICU in which the project is located. The program addresses the needs of the families throughout the hospitalization, during the transition home, and in the event of a newborn death. Moreover, it contributes to the NICU staff's professional development by offering continuing education on topics related to caring for the critically ill newborn.

Tara Bristol is the UNC / March of Dimes NICU Family Support Specialist. Tara is the mother of a NICU graduate. Her son Jack, now two and a half, was born at 27 weeks gestation. She and her husband spent 83 days in the NICU after Tara delivered due to severe preeclampsia. Feeling that she wanted to do something with the profound experience of having a baby in the NICU, Tara became a founding member of the NICU Family Advisory Board in January of 2006. Tara holds a MA in psychology and has completed two years of doctoral-level training in child clinical/health psychology. She works closely with the Postpartum Plus program – a partnership that is proving to be important for both programs. Tara can be reached at 919-843-0552 or at [tbristol@unch.unc.edu](mailto:tbristol@unch.unc.edu).

— THE BRISTOL FAMILY —



# HEALTH SNAP SHOTS

Among women of reproductive age in North Carolina:

## Weight and Exercise

- 25% are obese.<sup>1</sup>
- 62% do not meet minimum recommendations for physical activity.<sup>2</sup>

## Substance Use

- 24% Use Tobacco<sup>1</sup>
- 8% Engage in Binge Drinking<sup>1</sup>
- 7% Engage in Illicit Drug Use<sup>1</sup>

Although the percentage of North Carolina women who smoke is declining among all racial groups, it still remains 65% higher than the Healthy People 2010 objectives.<sup>3</sup>

## Preconception Planning

- 45% of pregnancies are unintended<sup>4</sup>
- 62% do not take folic acid daily<sup>5</sup>
- 19% may not be rubella immune<sup>6</sup>

## Mental Health

- 23% reported 1-8 days of poor mental health in the past month.<sup>2</sup>
- 20% reported being moderately or very depressed in the months after giving birth.<sup>7</sup>

## Barriers to Healthcare

- 24% are uninsured (rises to 60% for Hispanic women)<sup>1</sup>
- 27% had no dental visit in the past year<sup>1</sup>

## Sexually Transmitted Infections<sup>8</sup>

- Chlamydia Case Rate is 1320/100,000 \*
- Gonorrhea Case Rate is 432/100,000 \*
- Women living with HIV/AIDS is 312/100,000 \*
- Syphilis Case Rate is 8/100,000

\*These rates are significantly higher than in most states.

## A Word about Disparities

Although there are disparities among all ethnic groups in a variety of health areas concerns, young African American women in particular are significantly more affected by many of the health concerns listed above than other groups. For example, 45% of African American women are obese, compared to 27% of all women in North Carolina.<sup>2</sup>

### Sources

- 1 NC BRFSS Data Set 2005
- 2 NC Women's Health Report Card 2007; rates for women age 18 and over
- 3 Healthy People 2010 Objectives [www.healthypeople.gov](http://www.healthypeople.gov)
- 4 NC PRAMS 1997-2000
- 5 NC BRFSS 2006
- 6 NC State Laboratory, Prenatal Dataset, 2006
- 7 NC PRAMS 2000, 2003
- 8 NC Division of Public Health, HIV/STD Prevention and Care Branch, 2006

# Weight Management During and After Pregnancy

Jennifer Best, PhD,

Department of Psychology, UNC at Charlotte

Ushma Mehta, MPH, Anna Maria Siega-Riz, PhD

Department of Nutrition and Epidemiology, UNC School of Public Health

Women are entering pregnancy at higher weights than ever before. In fact, the percent of women of childbearing age (between 20-39 years) who are overweight or obese has risen approximately 17% in the last 25 years, reaching a current prevalence of 30%. Further, most women are gaining more weight during pregnancy than the Institute of Medicine (IOM) recommends. Current research shows that it is this combination of entering pregnancy with a high BMI and gaining excessively during pregnancy that leads to an increased risk of maternal and fetal complications.

Weight gain above IOM recommended ranges is not only linked to poorer birth outcomes but also to long-term postpartum weight retention and higher childhood BMI. Pregnancy care has shifted from a focus on advocating weight gain during pregnancy in order to prevent low fetal birth weight, to examining the effects of gestational weight gain on birth complications and long-term obesity.

Current guidelines for gestational weight gain were established by the Institute of Medicine in 1990. The IOM has recently received funding to review and update these guidelines. Guidelines vary according to pregravid BMI as detailed in the table below.

Pregravid BMI	Recommended weight gain (lbs)
underweight (<19.8 kg/m <sup>2</sup> )	28-40
normal (19.8–25.9 kg/m <sup>2</sup> )	25-35
overweight (26–29 kg/m <sup>2</sup> )	15-25
obese (≥30 kg/m <sup>2</sup> )	15*

\* There is no established upper limit.

## FACTORS AFFECTING PREGNANCY WEIGHT GAIN

### EDUCATION

A significant proportion of women report not having knowledge of the IOM recommendations. Providers should be prepared to advise women early in pregnancy about appropriate weight gain limits depending on their BMI prior to conception. This is a critical first step in helping to foster better communication about the risks of inadequate and excessive pregnancy weight gain for both the mother and child.

### LOCUS OF CONTROL

A recent study found that belief in external factors (e.g., fate or powerful authority figures) was associated with gaining a higher than recommended proportion of weight

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during pregnancy. This relationship appeared to be particularly relevant among women who were younger and who were of ethnic minority status.

#### **SMOKING**

Roughly 13% of women in the US report continuing to smoke during the course of pregnancy. Some women use tobacco as a way to regulate weight during pregnancy, a method of weight control that frequently results in not gaining weight in accordance with IOM recommendations.

#### **NUTRITION**

It is a common myth that pregnancy is a time in which women now have permission to “eat for two”. National organizations have suggested that for most women, increasing daily caloric intake by only 350 kcal is sufficient to promote the health and well-being of the developing child. Establishing positive eating practices during pregnancy could also help with weight loss in the postpartum period.

#### **PHYSICAL ACTIVITY**

For many women, pregnancy is a time of reduced physical activity. However, increasing (or maintaining) a sedentary lifestyle during pregnancy coupled with poor nutrition could result in higher weight gain during pregnancy. Remaining active during pregnancy can help prevent excessive weight gain. Regular exercise may also help reduce stress, feelings of depression and body dissatisfaction while at the same time facilitating easier weight loss in the postpartum period.

#### **STRESS & DEPRESSION**

As women adjust to the many physical changes that occur during pregnancy, they may also experience significant emotional changes. Approximately 20% of women report experiencing symptoms of depression while pregnant. Research has shown that higher reports of depression during pregnancy are linked to gaining more weight than recommended.

#### **BODY IMAGE**

Pregnancy involves many psychosocial changes that correspond to the physical transitions. Alterations in weight and body shape could lead to a change in how the pregnant woman perceives her body size and how accepting she is of her growing body shape. Race/ethnicity has a role to play in body image, as well. African American women tend to have higher body image satisfaction and greater weight gain than Caucasian women. Research has shown that an increasing divide between a woman’s ideal body shape and her current shape raises the risk of gaining outside IOM recommended ranges. Body image has also been related to postpartum depression.

#### **BREASTFEEDING**

Breastfeeding has been associated with providing a wealth of benefits for the baby. Research now suggests that exclusive breastfeeding, in conjunction with other healthy lifestyle factors such as balanced nutrition and regular exercise, may also help women to lose weight in the postpartum period. •



#### **Sources**

IOM, Nutrition During Pregnancy: Part I: Weight Gain. The National Academies Press, 1990.

Institute of Medicine Committee on the Impact of Pregnancy Weight on Maternal and Child Health, 2007. *Influence of Pregnancy Weight on Maternal and Child Health: Workshop Report*. Washington, DC: National Academies Press.

Additional references available on request of the author at [umehta@email.unc.edu](mailto:umehta@email.unc.edu)



*“Women who are healthy are a vital component of North Carolina’s future, whether they are pregnant or not. It’s time to make the investment, to assure the health of women, and to have a long-term, positive impact on the health of newborns.”*

-DeClerque JL, Freedman JA, Verbiest S, Dondurant S

# NC Healthy Start *Baby Love Plus* Family Care Coordination Model: The Program and Lessons Learned

**Julie DeClerque, DrPH, MPH**

*The Cecil G Sheps Center for Health Services Research*

Since 1997, NC Healthy Start *Baby Love Plus* has been working to reduce disparities in birth outcomes, promote healthy birth intervals, and improve efficacy in service utilization for families at highest risk of having subsequent unhealthy pregnancies. Originally, emphasis was on the prenatal period, with outreach workers recruiting from the community and encouraging women to go early for prenatal care services. Gradually, the emphasis has shifted to a broader focus encompassing the perinatal period to achieve better outcomes for women and infants.

The *Baby Love Plus* program initiated postpartum case management in 2000 as an extension of the State's Maternity Care Coordination (MCC) services to Medicaid eligible pregnant women. The program enables high-risk women to continue care coordination services for two years postpartum. Social workers staff the program in three regions across 14 counties. These counties were selected as they have some of the highest disparities in infant mortality in the state. North Carolina receives four federal grants from Healthy Start, three of which support the *Baby Love Plus* Program. All women are screened within 60 days postpartum, assessed for risk, and referred for care as needed. The postpartum case management work is designed to do the following: assess needs in a woman's life (health, environment, life course, maternal role, social supports, and health and human service utilization); coordinate available services, including referrals to assure identified needs are being met; encourage effective use of contraception to assure a healthy birth interval; and foster the client's increased autonomy and improved sense of self-efficacy in meeting her own needs and the needs of her family.

The frequency and intensity of contacts with each patient varies, depending on

the coordinator's assessment of need. After the initial home-visit and baseline assessment, subsequent contacts may be by phone, in person at local clinics, or other agencies, as appropriate and convenient. While the total number of contacts may vary for each patient, there is a minimum schedule of contacts maintaining a standard set of information and assuring continuity of care. Contacts are made monthly for the first six months postpartum, bi-monthly for months six to twelve, and quarterly for months 12 through 24. Additional contacts are made depending on the client's needs.

Program evaluation has uncovered important lessons about this population of women. There are several reasons why clients value family care coordination services (FCC). Having a stable source of income to meet basic needs is often top priority, along with having a safe place to live. Having someone to confide in and help with problem solving, especially about partner or family issues is also regularly mentioned. Finally, the issue of childcare is often of great concern. The FCC program works with mothers to address these needs. Things that matter less to clients in terms of voiced concerns include: oral health, exercise, family planning, substance use, and breastfeeding. Most clients know about support services that are available and receive the ones they need. Of all women enrolled in MCC for their prenatal care, 65% said they received support services, and of those that did not, the majority said it was because they chose not to use them.

The program has had some success with pregnancy intendedness, a very difficult but central issue that impacts many outcomes. While it is common for women to come into case management with an unintended pregnancy (73.9%), most clients at MCC close-out (94.3%) are more aware of their pregnancy intentions and have chosen a birth control method to delay their next

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## INDICATIONS FOR REPRODUCTIVE GENETIC REFERRAL

Advanced Maternal Age (>35 years at delivery)

- Increased risk to have a baby with a chromosome abnormality such as Down syndrome

Maternal Medication/Substance Exposure

- ACE inhibitors
- Antidepressants
- Chemotherapy
- Alcohol
- Drugs

Maternal infection in pregnancy

- Chicken pox
- Cytomegalovirus
- Parvovirus
- Toxoplasmosis

Maternal Medical Condition

- Diabetes
- Epilepsy
- PKU (Phenylketonuria)

Maternal Environmental Exposure

- Radiation
- Toxic chemicals

Prior affected pregnancy/child or Family History

- Cardiac defects
- Spina bifida
- Down syndrome
- Genetic condition
- Developmental delay
- Any birth defect, genetic disorder, or chromosome abnormality

Prior stillbirth

- Any couple with a prior stillbirth should have an evaluation performed to determine if they are at an increased risk for recurrence

Multiple miscarriages

- Any couple with 2 or more miscarriages in the first trimester should be evaluated as to the cause





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**Julie Moldenhauer, MD**

UNC Department of OB/GYN,  
Division of Maternal Fetal Medicine

Certain ethnic groups are at increased risk for certain conditions

- African Americans: sickle cell disease
- Northern European Caucasian: cystic fibrosis
- Ashkenazi Jewish: Cystic fibrosis, Tay-Sachs, Canavan disease, Familial Dysautonomia, Gaucher Disease, Niemann-Pick Disease, Fanconi Anemia (Type C), Mucopolidosis Type IV, Bloom Syndrome
- Cajun and French Canadian: Tay-Sachs disease
- Mediterranean and Asian: Thalassemia

Patients should be prepared for their genetic visit. The more information available regarding the medical status of affected family members, the better able counselors are to provide a more accurate assessment of potential recurrence risks and / or prenatal testing options.

Once a woman becomes pregnant there are a number of testing options. These are easier to explain as are the results when a woman has been counseled prior to pregnancy.

Screening options include:

- First trimester screening: Nuchal translucency
- Second trimester screening: Maternal serum screen Ultrasound
- Diagnostic testing: Chorionic villus sampling Amniocentesis

pregnancy until they are ready. There is still much work ahead. Of the women who reported unintended pregnancies, 34.7% reported using what is considered to be a reliable birth control method. Reproductive tract infections and sexually transmitted diseases are disturbingly high in many of the program counties. In a recent survey of postpartum clients, 87.7% said they had ever had or currently have an RTI/STD. While all reported having received treatment, almost one in five said that their partner did not receive treatment, or that they did not know whether their partner had received treatment.

The program also has developed a list of suggestions for improving health between pregnancies. A key issue is the need for effective clinical follow-up of maternity clients who had LBW or preterm births. A comprehensive clinical assessment of the reasons for the poor birth outcome soon after delivery would help the woman understand and address her risk factors before becoming pregnant again. Clear and simple language from clinicians is another suggested improvement, as providers may use terminology that women do not understand. Extending medical care beyond pregnancy would correct the loss of medical coverage that impedes women's access to continued reproductive health care, particularly for low-income women. Wellness is very hard to afford without access to basic health care services in the community. North Carolina needs more programs addressing stress from the male partner's perspective. There is a need for programs for men that focus on family welfare, healthy relationships and communication, and information about health and mental well-being. Such programs would go a long way towards improving factors that contribute to women's poor health, both prior to and between pregnancies.

The program has learned that a client-centered, needs-based approach will bring the most success. Building trust from the beginning is key. Starting with the client's priority concerns—often basics like food, housing, utility bills and finances, job training, and paternity issues —will help establish the relationship so that next steps and positive health issues are more likely to have meaning for her. Helping clients develop a tailored action plan for the next year is critical.



Unlike prenatal services where the focus is relatively confined to having a healthy full-term delivery, interconception periods are very broad, with varying consensus on standards of care, timeframes for beginning and ending of care, or benchmarks for quality of care. Tailored plans can help narrow such broad recommendations into viable action.

Program experience reveals some lessons about reaching and enrolling women in the postpartum period.

Enrollment into the BLP program postpartum is improved when women are introduced directly to the care coordinator as part of a successful, warm "hand-off" from her prenatal Maternity Care Coordinator. Women with a history of a problem pregnancy are more likely to enroll. These women have a heightened sense of vulnerability that drives them to seek help. The program has also learned that it is important to be creative and flexible in one's approach, as well as tenacious, in order to engage women. Willingness to learn from the women, to work with them, and to show respect for them are important practice components. Further, coordinators have found that the way a message is presented to the client is more important than the message itself in gaining women's trust and commitment. Women should do the planning, while coordinators or providers offer guidance and advice. Not all women have the same goals or the same ideas about the way to reach a goal. The role of coordinators is to continue to offer support in partnership with women in ways that are engaging, empowering, and enriching. As one coordinator described it, "The most important aspect of our work is that we focus on building women's strengths, building trusting relationships with our clients to enable supporting their own capacity for resilience". •

*This article was compiled with feedback from family care coordinators and other staff in the NC Healthy Start Baby Love Plus Program.*

*For more information contact the author at [Julie\\_DeClerque@unc.edu](mailto:Julie_DeClerque@unc.edu). A map of the BLP counties is posted on [mombaby.org](http://mombaby.org).*

# The P4 Program Making a Difference A Case Study from the Front Lines

**Suzanne Shores, CNM, MSN**  
UNC Center for Maternal and Infant Health

Mrs. Q is a 41 year-old, G2P0303 who delivered viable twins at 25 weeks gestation via stat cesarean section for breech presentation and spontaneous preterm labor at an outside hospital. Due to prematurity, both twins were transferred to UNC on the first day of life. Mrs. Q had received no prenatal care; she lives approximately 3 hours from UNC. The P4 Coordinator became involved with Mrs. Q after a referral was made by the NICU social worker for evaluation of sore throat. Mrs. Q was seen in the postpartum clinic by the coordinator. During the visit, Mrs. Q received treatment for her sore throat, as well as a full assessment of her medical needs. The following risk factors were identified:

- Morbid Obesity (BMI 47)
- Insulin Dependent Diabetes: not evaluated, no medications in > 2 years
- Asthma
- Preterm Delivery x 3
- No current method of contraception
- Smoker (1/2 pack per day)
- 15 weeks postpartum with no postpartum visit

The P4 coordinator treated the patient's immediate medical needs, provided education material on smoking cessation and contraception, and made a follow-up appointment. Mrs. Q returned to the clinic one week later for a women's wellness exam. The coordinator spoke with her at length

concerning her health goals and her fears for her babies in the NICU. Referrals were made to pulmonology, the sleep lab (for sleep apnea), a nutritionist, the NC Quit Line, and the UNC Mood Clinic. Medication to assist with smoking cessation was offered and declined. Mrs. Q set a goal of smoking one less cigarette every day and plans to go outside for a walk if tempted to smoke. She selected Depo Provera as her contraception method. She was given information about the Mirena IUD and sterilization to review. Mrs. Q's random blood sugar was 89. She agreed to check her fasting blood sugar and 2 hour post-prandial for one week. A referral to Endocrinology will be made based on the result. Finally, Mrs. Q agreed to keep a food diary for one week with a goal of eating fast food no more than twice weekly, increasing daily water consumption and walking for 10 minutes two times each day.

Through the P4 program, Mrs. Q was able to have her immediate health needs addressed without traveling 3 hours to a healthcare provider in her community or going to the emergency department at UNC. She gained a great deal of knowledge concerning her health care needs and was able to have someone assist her in navigating the system for follow-up care of chronic illness. She was also able to set small goals for herself concerning smoking cessation and weight reduction. Mrs. Q will continue to receive services through the P4 Program until she is one year postpartum. •

## P4 ADVISORY COUNCIL

The Postpartum Plus Prevention Program is fortunate to have a strong 24 Member Advisory Council in place to provide guidance in program design, implementation and evaluation. Members are representatives of the following areas: lactation services, maternal fetal medicine, health services research, neonatology, intensive care nursery nurse leadership, social work, psychiatry, NC Division of Public Health, UNC School of Public Health, two out of state universities, the March of Dimes, and mothers of preterm infants. A complete listing of the advisory board members is posted on [www.mombaby.org](http://www.mombaby.org).



# Once is Enough: Preventing Recurrent Preterm Birth

**Michael S. Ruma, MD, MPH**  
UNC Department of OB/GYN, Division of Maternal Fetal Medicine

As the leading cause of perinatal morbidity and mortality across the globe, preterm birth, defined as delivery of an infant prior to 37 weeks' gestation, is an enormous public health problem. Spontaneous preterm birth exists as an elusive enemy to any and all healthcare providers who care for pregnant women. Concealed well by many non-specific symptoms, such as nausea, low back pain, diarrhea, and increased vaginal discharge, in patients who are pregnant for the first time or in those who have had successful term deliveries in the past, preterm labor often remains a guessing game with little or no ability to predict which patient will ultimately deliver early. Unfortunately to date, most attempts at primary prevention of preterm birth

remain ineffective. Given the ineffective efforts at preventing spontaneous preterm birth in first pregnancies and in multiparous patients without a history of preterm birth, substantial research has focused on reducing the rates of recurrent preterm birth. Fortunately, inroads are being made toward effective predictive strategies and therapy modalities.

The first step in secondary prevention of preterm birth is to identify those patients who have delivered infants preterm in the past. This obstetrical history carries substantial weight toward prediction of the risk of subsequent preterm birth for the patient (Table 1 and Fig. 1). During a careful review of the obstetrical history, providers need to identify any delivery

*continued on page 11*

**Table 1.** Evaluation of Relative Risks for Recurrence Risk of Spontaneous Preterm Delivery in Several Populations †

Study / Trial	Recurrence of sPTB RR (95% CI)	Gestational Age for Recurrence of Preterm Birth
MFMU Network <sup>1</sup>	2.5 (1.9–3.2)	For initial delivery at less than 37 weeks
Missouri <sup>2</sup>	3.6 (3.2–4.0)	For initial delivery at less than 35 weeks
Dallas, Texas <sup>3</sup>	5.9 (4.5–7.0)	For initial delivery at less than 35 weeks
Denmark <sup>4</sup>	4.8 (3.9–6.0)	For initial delivery at 32–36 weeks
Denmark <sup>4</sup> , MFMU Network <sup>1</sup>	6.0 (4.1–8.8)	For initial delivery at less than 32 weeks
MFMU Network <sup>1</sup>	10.6(2.9–38.3)	For initial delivery at less than 28 weeks

RR, relative risk; CI, confidence interval; sPTB, spontaneous preterm birth; MFMU, Maternal-Fetal Medicine Unit  
 \* Missouri (1989–1997)<sup>2</sup>, Dallas, Texas (1988–1999)<sup>3</sup>, Denmark (1982–1987)<sup>4</sup>, and the MFMU Network's 10 clinical United States sites<sup>1</sup>

continued from page 10

prior to 37 weeks' gestation including information such as the infant birth weight, symptoms and details preceding delivery, and any determinations of etiology of the preterm birth. After identification of the patient with a prior preterm birth, the healthcare provider is better positioned to initiate therapy in efforts to prevent preterm birth and utilize screening methods to assist in the prediction of recurrent preterm delivery.

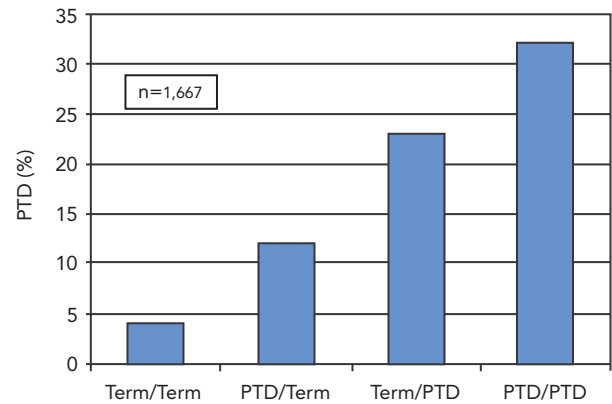
After two recent studies, supported by past research, evidence continues to substantiate the use of 17 alpha hydroxyprogesterone caproate (17P) to prevent recurrent preterm birth. In 2003, a randomized controlled trial conducted in Brazil found a substantial reduction of preterm births, 14% vs. 29%, among the intervention and placebo groups respectively. In that same year, the Maternal-Fetal Medicine Units Network randomized trial in the United States reported results on the effect of versus placebo in patients with a prior spontaneous preterm birth. Intramuscular administration of 17P from 16 to 36 weeks of gestation significantly reduced the rate of recurrent preterm birth, 36% vs. 55%, among treatment and control groups. Importantly, no differences in pediatric milestones or development were noted in follow-up evaluation of children exposed to progesterone and placebo.

So why are providers not utilizing progesterone in attempts to reduce the recurrent preterm birth rate? In 2007, Bailit *et al* described limited identification of patients who qualify for treatment with progesterone and low rates of initiation of therapy in correctly identified patients. These results are not promising and point to a number of potential deficiencies which need to be addressed. A lack of education, awareness, or disregard of current research by healthcare providers, as well as concerns about reimbursement and access to 17P contribute to the overall lack of acceptance and adherence of providers to the provision of progesterone to patients at risk for recurrent preterm birth.

These deficiencies in utilizing 17P are of concern as only 6 women with a prior spontaneous preterm birth would need to be treated to prevent one birth before 37 weeks. Progesterone therapy in the prevention of preterm birth is significantly more effective than the use of aspirin to prevent stroke, which requires treatment of over 100 patients to prevent one stroke.

Much work remains and multiple studies are underway to further understanding of the mechanisms leading to preterm delivery. These include interventions aimed at addressing maternal health concerns in-between pregnancies. At present, progesterone resides as one effective method to employ in

**Figure 1.** Risk of Subsequent Preterm Birth Related to Outcome of Prior Pregnancy. †



the battle against preterm birth. Currently, the American College of Obstetricians and Gynecologists recommends the use of progesterone for secondary prevention of preterm birth. Once is enough...it is imperative that providers increase their efforts to reduce recurrent preterm birth. •

**Sources**

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Additional references available on request of the author at [mruma@med.unc.edu](mailto:mruma@med.unc.edu)



UNC Center for Maternal and Infant Health  
Campus Box 7181  
Chapel Hill, NC 27599-7181

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Chapel Hill, NC  
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## EDITORS

**Emily Kenyon, MPH**

*UNC Center for Maternal and Infant Health*

**Kate Menard, MD, MPH**

*UNC Center for Maternal and Infant Health  
UNC Dept of OB/GYN, Division of Maternal  
Fetal Medicine*

**Suzanne Shores, CNM, MSN**

*UNC Center for Maternal and Infant Health*

**Sarah Verbiest, MSW, MPH**

*UNC Center for Maternal and Infant Health*

## PRECONCEPTION RESOURCES

### **Be Smart – The NC Medicaid Family Planning Waiver**

This program extends coverage for health care related to family planning.

<http://www.dhhs.state.nc.us/dma/MFPW/MFPWprovider.htm>

### **Centers for Disease Control and Prevention**

[www.cdc.gov](http://www.cdc.gov)

### **Eat Smart Move More North Carolina Campaign**

[www.eatsmartmovemorenc.com](http://www.eatsmartmovemorenc.com)

### **National Women's Health Resource Center**

[www.healthywomen.org](http://www.healthywomen.org)

### **National Preconception Health Clinical Curriculum**

coming soon to [www.mombaby.org](http://www.mombaby.org)

### **North Carolina Preconception Action Plan**

[www.mombaby.org](http://www.mombaby.org) (click on preconception)

### **North Carolina Folic Acid Campaign**

[www.getfolic.com](http://www.getfolic.com)

### **North Carolina Good Health Directory**

This directory helps people find resources within their community to improve their health.

[www.ncpreventionpartners.org](http://www.ncpreventionpartners.org)

### **North Carolina Healthy Start Foundation**

Orders may be placed via this website for free magazines and flyers about preconception/interconception health.

[www.nchealthystart.org](http://www.nchealthystart.org)

### **March of Dimes**

[www.marchofdimes.com](http://www.marchofdimes.com)

### **My Pyramid**

[www.mypyramid.gov](http://www.mypyramid.gov)

### **Quit Now NC – Smoking Cessation**

[www.quitnownc.org](http://www.quitnownc.org)

### **Smoke Free Families**

[www.helppregnantmokersquit.org](http://www.helppregnantmokersquit.org)

### **UNC Center for Maternal & Infant Health**

[www.mombaby.org](http://www.mombaby.org)

### **UNC Perinatal Psychiatry Program**

UNC Center for Women's Mood Disorders

[www.womensmooddisorders.org](http://www.womensmooddisorders.org)

information: 919-966-9640

appointments: 919-966-5217