

THE POSTPARTUM VISIT: AN OVERLOOKED OPPORTUNITY FOR PREVENTION

Sarah Beth Verbiest, Master of Social Work and Master of Public Health

A dissertation submitted to the faculty of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Doctorate in Public Health in the Department of Health Policy and Management.

Chapel Hill
2008

Approved by:

Ned Brooks, DrPH (Chair)

Shoou-Yih Daniel Lee, PhD

Milton Kotelchuck, PhD, MPH

Larry Mandelkhr, MBA, CPHQ

Merry-K Moos, MPH, FNP, FAAN

ABSTRACT

SARAH VERBIEST: The Postpartum Visit: An Overlooked Opportunity for Prevention

(Under the direction of Edward Brooks)

Women's postpartum health needs affect the woman, her ability to care for her infant, and the health of babies she may have in the future. The postpartum visit provides an opportunity to help women transition from pregnancy to well-woman care, playing an important role in continuity of health services.

This dissertation included a comprehensive literature review of the postpartum visit. Using the data from key informant interviews, surveys, and a chart review, this study examined factors that impact the postpartum visit provided by the University of North Carolina's Obstetric Program, including: a) the health care system; b) provider attitudes and practice; c) the content of care; and d) the woman's medical needs and access to care.

The study found that certain populations of patients are less likely to receive a postpartum visit and when they do receive a visit they receive fewer services than other mothers. The content of the visit is variable and not as complete as it could be. Postpartum screening for conditions such as gestational diabetes and hypertension warrants further attention. Communication among providers across the system is incomplete. Low-income mothers are likely to leave their postpartum visit without a plan in place for follow up services. The research determined that there are things that could be done within the UNC Obstetric Clinic to improve the postpartum visit and the care new mothers receive.

Eight recommendations for improvements were generated from this study, including:

- 1) developing a comprehensive interconception care initiative;
- 2) building a University-wide research consortium;
- 3) marketing the postpartum visit to mothers;
- 4) improving postpartum visit compliance by strengthening the continuity of care given by providers;
- 5) improving the information available about mothers at the postpartum visit by adopting an electronic prenatal medical record;
- 6) enhancing the quality of the postpartum visit by implementing improvement initiatives;
- 7) expanding the information mothers receive at the postpartum visit by increasing the number of educational materials they receive; and
- 8) linking low-income mothers back to local health departments and clinics after their postpartum visit.

The postpartum visit is key in the journey toward improved interconception care for mothers.

DEDICATION

This work is dedicated to my husband Dirk and our amazing children Kylie and Tai.

Together we can do anything.

It is also dedicated to Maureen Darcy and the staff of the Women's Birth and Wellness Center who helped me become a healthy and happy new mother.

ACKNOWLEDGEMENTS

I would like to thank the members of my dissertation committee for their time, instruction, guidance and support.

I would also like to thank my parents, David and Patricia Zuber for their ongoing love and encouragement across all of my academic pursuits. I also owe a debt of gratitude to my grandparents, John and Pearl Tatko, for their gift, which allowed me to have the funds to matriculate into this program.

I could not have achieved this goal without many friends and family including: Amy Zuber, Susan Kimberly, Nichelle Perry, Carole Boudreau, Cheryl Cistuilli, Amy Mullenix, Anna Bess Brown, Susan Auger, Linda Kay Stone, Kathy Hodges, Barbara Beaman, Selden Holt, and my friends and colleagues in cohort 1. I am also grateful for the support and encouragement of all of the members of the Center for Maternal and Infant Health Team.

I am also grateful to the following friends and colleagues for their technical assistance, resources, and advice: Laura Baron, Peter Bernstein, MD, Melissa Burns, MA, Alice Chuang, MD, Kelly Felton, MHA, CPHQ, Janice French, CNM, MS, Kim Hamden, CNM, Joe Holliday, MD, MPH, Tina Inman, PhD, Tom Ivester, MD, MPH, Virginia Johnson, Bonnie Jones, MSPH, MSW, Juli Kidd, Alvina Long-Valentine, RN, MPH, Paul Mihas, Jeanette Moore, RN, Sarah Parvanti, MPH, Dennis Rodriguez, MS, Suzanne Shores, CNM, MSN, Sara Smith, MSW, MPH

TABLE OF CONTENTS

LIST OF TABLES	xii
LIST OF FIGURES	xiv
CHAPTER	
I. INTRODUCTION, STUDY AIMS, OBJECTIVES, AND SIGNIFICANCE	1
Introduction.....	1
Definitions.....	3
Conceptual Framework.....	5
Study Aims and Objectives.....	7
Significance.....	10
II. LITERATURE REVIEW.....	14
Maternal Health Needs.....	14
Utilization of Postpartum Care.....	32
Postpartum Visit Services.....	36
Health Care Provider Attitudes and Practices.....	41
Health Care System Impact on Postpartum Care.....	48
Programs and Recommendations Focused on Improving Care.....	52
Summary.....	58
III. METHODOLOGY.....	61
Operational Definitions.....	61

Study Design.....	61
Study Population.....	62
Data Collection: Patient Chart Review.....	63
Key Informant Interviews.....	69
Provider Survey.....	72
Recommendations.....	75
Confidentiality.....	79
IV. CHART REVIEW RESULTS.....	80
Patient Characteristics.....	81
Aim 1: Postpartum Visit Utilization.....	82
Aim 2: Services Receive at the Postpartum Visit.....	84
Aims 1 & 2: Postpartum Visit Utilization and Services for High-Risk Mothers.....	94
Aim 4: Health Care System Factors that Affect Utilization and Services - Resident and Faculty Service Comparison.....	100
Supplement to Aim 2: Observation of the Utilization of Care at UNC in the First Year Postpartum.....	103
Discussion.....	106
V. KEY INFORMANT INTERVIEW RESULTS.....	109
Informants.....	109
Analysis.....	110
Aim 4a: Health Care System Factors that Influence Utilization.....	113
Aim 4b: Health Care System Factors that Influence the Services Provided.....	119
Aim 4c: Health Care System Factors that Influence Provider Care.....	134

Aim 5a: Gaps that Should be Addressed.....	141
Aim 5: Recommendations to Enhance the Postpartum Visit.....	145
Aim 5b: Elements Required to Address gaps and Promote Change.....	155
Examples of Good Practice.....	158
Roles and Perceptions of Postpartum Care for New Mothers at UNC.....	160
Discussion.....	162
 VI. HEALTH CARE PROVIDER SURVEY RESULTS.....	 167
Provider Background.....	168
Provider Responses.....	169
Discussion.....	180
 VII. DATA SYNTHESIS, LIMITATIONS, AND DISCUSSION.....	 184
Data Synthesis.....	185
Limitations.....	188
National and State Issues.....	192
Discussion.....	196
 VIII. RECOMMENDATIONS.....	 207
Recommendation #1: Develop a Unified, Comprehensive Interconception care Initiative at UNC.....	 209
Recommendation #2: Build a Research Consortium at UNC to Improve Knowledge about Postpartum and Interconception Health and Health Care for Women.....	 213
Recommendation #3: Market the Postpartum Visit to Women.....	216

Recommendation #4: Improve Postpartum Visit Compliance by Strengthening the Continuity of Care Given by Providers.....	222
Recommendation #5: Improve the Information that is Available about Mothers at the Postpartum Visit by Adopting an Electronic Prenatal Record.....	230
Recommendation #6: Enhance the Quality of the Postpartum Visit by Implementing Improvement Initiatives.....	238
Recommendation #7: Expand the Information Mothers Receive at the Postpartum Visit by Increasing the Number of Educational Resources They Receive.....	243
Recommendation #8: Link Low-Income Mothers Back to Local Health Departments and Community Clinics After the Postpartum Visit.....	248
Discussion.....	255
Summary.....	259
Final Word.....	261
APPENDIX A.....	263
APPENDIX B.....	269
APPENDIX C.....	276
APPENDIX D.....	279
REFERENCES.....	280

LIST OF TABLES

TABLES

1. General Characteristics of Women Who Delivered at UNC in 2006.....	63
2. UNC Faculty & Resident Clinic Health Care Providers 2007.....	74
3. Summary of Study Inclusion and Exclusion Criteria.....	75
4. Comparison of Study Sample Population to Total Population.....	81
5. Patient Characteristics and Postpartum Visit Utilization.....	82
6. Core Postpartum Services Provided to Women Who Received a Postpartum Visit.....	85
7. Parity and Family Planning Discussions.....	86
8. Services Received Based on patient Characteristics.....	91
9. Receipt of Follow Up Referrals for Mothers with High-Risk Conditions.....	95
10. Faculty and Resident Core Postpartum Visit Service Provision.....	100
11. The Number of Services Provided at the Postpartum Visit by Resident/Faculty.....	101
12. Reasons for Additional Care at UNC.....	105
13. Key Informant Themes and # Statements Coded per Theme.....	110
14. Description of Provider Background.....	168
15. Health Care Provider Years of Training.....	169
16. New Services Requested for Postpartum Visit Patients.....	177
17. Recommendations for Postpartum Visit Improvements.....	208

18. SWOT Analysis for Developing a Unified, Comprehensive Interconception Care Initiative at UNC.....	212
19. SWOT Analysis of Building a Research Consortium at UNC to Improve Knowledge about Postpartum and Interconception health and Health Care for Women.....	215
20. SWOT Analysis of Marketing the Postpartum Visit to Women.....	219
21. SWOT Analysis of Improved Postpartum Visit Compliance by Strengthening the Continuity of Care Given by Providers.....	228
22. SWOT Analysis of Improving the Information that is Available about Mothers at the Postpartum Visit by Adopting an Electronic Prenatal Record...	233
23. SWOT Analysis for Enhancing the Quality of the Postpartum Visit by Implementing Improvement Initiatives.....	241
24. SWOT Analysis for Expanding the Information Mothers Receive by Increasing the Number of Educational Resources They Receive at the Postpartum Visit.....	246
25. SWOT Analysis for Linking Low-Income Mothers Back to Local Health Departments and Community Clinics.....	251

LIST OF FIGURES

FIGURES

1. Current Model of Women’s Reproductive Health Care: ‘Women as Vessels’...	6
2. Proposed Model for Improved women’s Reproductive Health Care: ‘Women as Focus’.....	6
3. Conceptual Model.....	7
4. Study overview.....	10
5. Responses to Statement about Postpartum Unaddressed Needs.....	170
6. Responses as to Gaps in Follow Up Screening.....	171
7. OB/GYNs Perceptions as Primary Care Providers for their Patients.....	173
8. Timing of One Additional Reimbursed Visit.....	175
9. UNC Clinic Postpartum Visit Performance as “Gateway to Well-woman Care”.....	178

CHAPTER TWO

LITERATURE REVIEW

Casting a wide net, a number of search terms and databases were used to find studies and articles of relevance to the topic of the postpartum visit and interconception care. The databases used for the literature review included: PubMed, CINAHL, ISI Web of Science, Business Source Premier, Academic Search Premier, Alt Health Watch, and PsychInfo. The search reviewed articles published from 1980 forward. The literature review looked only at articles written in English. The review was not limited to articles published in the United States, but the international studies had to have some relevance to the US postpartum health care system. In addition to published studies, editorials and commentaries were also reviewed and included as relevant. Key search words such as postpartum period and postnatal care yielded hundreds of articles, which were heterogenic and largely focused on specific clinical conditions and their treatment. Combinations of these terms with others such as postpartum visit, postnatal visit, and postpartum care uncovered a smaller corpus of work. Other key words and combinations were used including: community health planning, continuity of patient care, focus groups, infant care, depression, smoking, family planning, anemia, breastfeeding, maternal health services / organization & administration, patient compliance, postnatal care/organization & administration, social support, postnatal care/utilization, attitude to health, postnatal care / psychology, postnatal care/methods, hypertension/gestational diabetes/ postpartum, interconception, postpartum visit/providers,

maternal role attainment, maternal identity, postpartum health/mothers, and postpartum / physicians. Duplication of the most relevant studies emerged fairly rapidly.

To enhance the search, links to relevant articles using the “related links” tool were pursued. These links occasionally led to articles of interest. A search for additional articles by certain authors was also somewhat fruitful. A review of the bibliographies of seminal articles was one of the best ways to find new articles and to determine if the literature was reaching a saturation point. A 2006 supplemental issue of the *Maternal and Child Health Journal* offered a wealth of information on preconception health and women’s wellness. Only one article, however, in the journal focused on postpartum and interconception care. The GoogleTM and Google ScholarTM search engine was used to find current research projects, programs and symposiums on this topic. This yielded information about several interconception initiatives in various states. The National Summit on Preconception Health, held in October 2007, included several poster and oral presentations about postpartum/interconception related topics of relevance to this topic. The literature was reviewed several times over the course of this research: January 2006, September 2007, and March 2008.

The literature review uncovered a number of studies that have looked at the needs of mothers in the postpartum period. Many of these articles focus on a specific area of interest such as smoking recidivism, obesity, postpartum depression, family planning, adapting to motherhood and breastfeeding. These articles draw strong links to the impact these conditions have on women’s wellness as well as the health the infant. Other articles addressed general maternal needs in the postpartum period as well as the family issues involved in adjusting to life with a new infant. Opinion articles in regard to the limitations of the current system of postpartum care in the United States have been published. There were a

handful of studies that reviewed barriers/facilitators to the postpartum visit, and several that considered the quality of postpartum care, with a focus on screening for a particular disease or mental health problem. Limited studies looked at the utilization of the postpartum visit. Surveys that assessed health care provider attitudes and beliefs about this visit were not found. Studies that systematically reviewed the content of the postpartum visit in a particular health care system or practice could not be found. Evidence as to the clinical significance of the visit, content of care and the reason for the timing at 6-weeks was scarce. The following pages provide more detailed information about the articles retrieved in this search.

Maternal Health Needs

Many new mothers have a variety of health concerns that carry forward from pregnancy, ranging from challenges with lactation and anemia to postpartum depression and weight gain. Albers comments, "...of the entire maternity care cycle, the postpartum period occupies the lowest priority in practice, teaching and research. Despite this, data from research outside the United States show that health problems after birth are very common, may persist over time and are often under-recognized by care providers." (3)

New mothers often experience fatigue, headaches, backaches and other more serious conditions that require attention. (23-26) Gjerdingen suggests that many mothers continue to have health needs several weeks after delivery. She surveyed 436 mothers at three-month intervals during the first year postpartum. She found a number of physical symptoms and illnesses including hand numbness, constipation, increased sweating, dizziness, hot flashes, fatigue, respiratory infections, acne, and pain with intercourse. The study surmised that this could have implications for postpartum health care practices and maternity leave policy. (27) Ansara and colleagues note that research on women's physical health postpartum tends to

focus on maternal mortality or conditions with life-threatening morbidity. They studied 200 women from six hospitals in one region following the delivery of a live-born, healthy baby. They found that 96% of the women reported at least one physical health problem at two months postpartum with excessive fatigue, bad headaches and backaches as the most common complaints.(25)

A study by Kahn and colleagues surveyed mothers who were taking a child to a health care visit in one of four pediatric clinics. They surveyed 559 women with a child 18 months of age or younger while they were waiting for their visit. The research found that two-thirds of the women studied reported at least one health condition or problematic health behavior, including depression, substance use, risk for unintended pregnancy, and emotional/physical abuse. Many also faced a number of barriers to health care. The authors noted that the unmet need was particularly interesting given the short interval between the survey and the woman's experience with prenatal care. (28) Maher and Souter's focus group work found that all women in their target population reported several health concerns postpartum. These mothers also reported that their health problems were often not addressed due to the pressures of new motherhood and more attention to the baby.(29)

The *Listening to Mothers II Postpartum Survey* found that in the first two months after birth at least half of the mothers identified having the following problems: physical exhaustion (62%), sleep loss (61%), sore nipples/breast tenderness (59%), feeling stressed (58%), and weight control (50%). Among the women who had experienced a cesarean section, 79% had pain at the incision site, 61% reported itching at the site, and 57% reported numbness at the incision site. The survey also found that many women had ongoing health concerns at six months postpartum. These included feeling stressed (43%), problems with

weight control (40%), problems with sleep loss (34%), lack of sexual desire (26%), and backache (24%). Mothers with cesarean sections continued to report numbness (31%), itchiness (21%), and continued pain at the incision site (18%).(30)

Thompson identifies a number of longer-term morbidity issues postpartum including fatigue, urinary and fecal incontinence, back problems, hemorrhoids, constipation, and some sexual problems. She highlighted that new mothers need many things in the postpartum period including information and counseling, support from healthcare providers, partner and family, health care for suspected or manifest complications, help with domestic tasks, maternity leave, protection from abuse/violence, and social reintegration into her family and community.(31-33) Gjerdingen and Center found a significant decline in perceived postpartum quality of life for both mothers and fathers six months postpartum.(34) Stainton et al found an international need for increased attention to the individual needs of mothers and fathers postpartum, with a particular focus on maternal post birth pain and the need for self care.(35) McGovern et al conducted a study of the work-related factors associated with the postpartum health of working mothers 11 weeks postpartum. She interviewed 817 new mothers by phone at 5 weeks postpartum and again at 11 weeks postpartum. She found that 43% reported fatigue and that they each reported about three childbirth related symptoms. She concluded that postpartum evaluations should include screening for anxiety and depression as well as evaluation of fatigue and other physical symptoms including job related stress. Providers should discuss with mothers their plans for returning to work and the possible need for intermittent leave to complete recovery from childbirth.(33) Burgio et al studied the prevalence and severity of urinary incontinence in the year postpartum among a group of 523 women. They found that 11.4% of the women in the study who reported some

degree of incontinence, had breastfed, had a high body mass index, a baseline of smoking, and other factors showing a significant association.(36)

Tobacco Use

Women are often counseled to avoid tobacco while pregnant, receiving additional support and reinforcement for positive behavior changes. Unfortunately, smoking recidivism is likely to occur for women who have reduced or stopped the use of tobacco products during pregnancy. (37-39) Pletsch and others have found that up to 70% of women resumed smoking by 12 months postpartum. Some issues associated with recidivism include: degree of dependence on nicotine, self-efficacy for smoking abstinence, concerns for their baby's health, partner or household member smoking, social influences, mental health, and body weight. She also notes the impact of depression on recidivism.(40) Levine et al studied women who stopped smoking during pregnancy. They found that women's motivation for smoking abstinence was an important factor in preventing recidivism. They also found a link between recidivism and women's perceived self-efficacy for weight control.(41)

Weight and Nutrition

The average body weight at the first prenatal visit has increased over 20% in the past two decades. Obesity increases the risk for complications of pregnancy including, hypertensive disorders of pregnancy, gestational diabetes, and operative deliveries. There is growing evidence that obesity and excess pregnancy weight gain may also increase a woman's risk of intrapartum complications. Misra reports that recent studies confirm that pregnancy weight gain leads to increases in women's weight and subsequent obesity. Failure to lose pregnancy weight gain in the first six months postpartum is an important marker for longer term weight retention and weight related morbidities such as Type II diabetes,

hypertension, cardiovascular disease, and some cancer.(20) Postpartum weight retention is a significant issue for women. It is an issue that can begin to be observed at the 6-week visit where the percentage of women who have returned to their pre-pregnancy weight is low.(42) Lederman et al note that most studies on postpartum weight retention show that some women retain a few pounds while others continue to weigh significantly more than they did prior to pregnancy. In a study of 47 Black and Hispanic mothers, they found that two-thirds of the women and 100% of the overweight/obese women gained excessive weight during pregnancy.(43) The *Listening to Mothers II Postpartum Survey* found that the mothers who responded gained an average of 30 pounds during their pregnancy and ended up with a net weight gain of 10 pounds from their pre-pregnancy weight.(30)

Published work by Bodnar et al highlights the public health significance of iron deficiency and low iron among pregnant and postpartum women. These nutrient deficiencies are associated with reduced work capacity, impaired cognition and adverse birth outcome.(44) In the United States, about 13% of women 0 to 6 months postpartum are iron deficient and 10% are anemic. Low iron status disproportionately affects low-income pregnant and postpartum women in the United States. Studies have shown that 22% are anemic, 30% have iron deficiencies, and 10% are both iron deficient and anemic.(45) Corwin and Arbour note that even with iron supplementation, by term a large number of pregnant women are iron depleted. However, full compliance with iron recommendations during pregnancy is rare. Further, they note that iron deficiency continues or worsens for a significant percentage of women during the postpartum period.(46) In spite of the significance of this problem, widespread attention and research regarding risk indicators and screening has not been applied to this issue. The most recent research on the topic was

conducted by Bodnar et al who were able to point out a number of maternal risk factors for these deficiencies. The authors recommend that pregnant women who have inadequate weight gain or severe nausea and vomiting should be screened, as should women with a high pre-pregnancy BMI or a high-birth-weight infant. They also suggest that more attention should be paid to maternal factors and complications of pregnancy and delivery as risk markers of poor iron status.(44) Other risk factors that warrant screening include: multiparity, anemia at 24-29 weeks, anemia before delivery, obesity and not exclusively breastfeeding. Universal screening may well be warranted for high-risk populations.(47) Corwin and Arbour suggest that new mothers should be contacted at 2 weeks postpartum and given the Modified Fatigue Symptom Checklist. All women reporting severe fatigue should be screened immediately.(46) Current CDC guidelines recommend anemia screening at 4 to 6-weeks postpartum only for women who were diagnosed as anemic in the third trimester, who had experienced excessive blood loss during delivery or whose pregnancies had resulted in a multiple birth. Earl and Woteki with the Institute of Medicine concur with the CDC's screening recommendations. They also recommend that iron supplementation stop at delivery.(48) At present, it seems that there are some discrepancies in opinion around protocol for postpartum anemia testing, with some researchers calling for more routine screening of a wider population of women, and other institutions supporting screening for a smaller risk pool among a very specific group of women.

All women of childbearing age in the United States are advised to take 400 mcg of folic acid daily to reduce their risk of having a baby with a neural tube defect (NTD). Folic acid must be taken prior to conception. During pregnancy, many women are encouraged to consume a daily prenatal vitamin. Unfortunately, new mothers may not be encouraged to

continue this health habit postpartum, particularly if they are no longer breastfeeding their baby. The literature suggests that new mothers may have an even higher risk for a NTD affected pregnancy due to potential depletion of folate from pregnancy and lactation if they conceive within 6 months postpartum. Mothers of Mexican origin may be particularly susceptible because of high parity, short birth intervals, low preconception vitamin use, and high baseline NTD rates.(49) In spite of the strength of the science and the severity of the birth defect, only 40% of women of childbearing age in the US take a vitamin daily. The impact of health care provider recommendations for folic acid supplementation have long been documented to be a key factor in encouraging women to take a daily vitamin with 91% of women in one survey saying they would take a vitamin if recommended to do so by their provider.(50) A 2002-2003 provider survey suggested that knowledge about birth defects and the need to supplement with folic acid was widely known. However, providers were not as well informed about the nation's high rates of unintended pregnancy and the correct dosage of folic acid. Further, only half recommended folic acid supplementation to their patients.(51)

Fatigue

Postpartum fatigue is a condition that affects physical and mental health and has implications for everyday activities. Postpartum fatigue is particularly challenging as new mothers have many complex skills to master and tasks to complete during this time. Anemia, infection/inflammation and thyroid disorders can all contribute to fatigue, however these conditions are rarely screened for and considered during the standard postpartum visit. Corwin and Arbour point out that subtle fatigue can develop for new mothers and may linger or worsen without being detected by them or their providers. Issues around anemia are

described above. The authors note that the exact incidence of postpartum infection is difficult to ascertain as many occur after a woman has been discharged. They cite one study that suggests that 6% of women at one month postpartum were noted to have some form of postpartum infection. Common types of postpartum infection are endometritis, urinary tract infection and mastitis. A woman's obstetrical history (including the events during labor and delivery) and her health history (HIV status, obesity and diabetes) influence the likelihood that she will have an infection of some kind. The authors suggest that women who screen positive for severe fatigue at two weeks should be screened for infections and treated appropriately. They also suggest that all mothers be checked for infection at the postpartum visit. Thyroid dysfunction can also lead to fatigue. After giving birth, between 1.1% and 16.7% of previously well women develop postpartum thyroiditis. Again, women who screen positive for severe fatigue should be asked a series of questions to determine if they have symptoms associated with thyroid disease and screened/treated accordingly. Overall, they recommend that nurses and other health care providers place a red flag in a woman's medical record to signal that she may be susceptible to anemia, infection or thyroid dysfunction.(46)

Reproductive Life Planning

Counseling women to avoid closely spaced pregnancies is important for her health and that of her future children. Non-breastfeeding women may experience their first ovulation less than six weeks after giving birth. As such, it is recommend that all women leave obstetrical delivery services with contraceptive methods.(52) The *Listening to Mothers II Postpartum Survey* findings found that 85% of women in the study with one child already at home wanted at least one more. Of those with two children, half wanted at least one more, and for those with three or more children, 26% wanted at least one more.(30) This finding

suggests that providers caring for women at the postpartum visit are indeed caring for women for whom interconception health messages are highly relevant and important. Gregory and colleagues suggest that the interpregnancy period is very important particularly in terms of encouraging birth spacing. Closely spaced pregnancies are associated with increased low birth weight, preterm birth, neonatal death and other adverse pregnancy outcomes attributed to decreased maternal reserves and nutritional depletion.(53)

Three studies, all conducted by Zhu, found the optimal interpregnancy interval to be 18-23 months. The research included a cross sectional study in Utah of 173, 205 singleton live births, a cross sectional study in Michigan of 435,327 live births, and another retrospective study in Michigan which included 565,911 live births. This research found that pregnancies occurring before 18 months and after 60 months (5 years) were at higher risk than those occurring within the 18-23 month pregnancy interval time span.(54-56) Zhu's research concludes that there is a relationship between interpregnancy interval and adverse birth outcomes.(57, 58) Klerman and colleagues found that among low-income women, the length of the interval between a delivery and the conception of the next child had a significant impact on preterm birth. In their study population, which included women who were primarily poor (over 90% were on Medicaid) and young, 2.4% had a pregnancy interval of less than 13 weeks, 7.5% had intervals between 13 and 25 weeks, and 17.4% had intervals between 26-51 weeks. They found that the rates of preterm delivery at interpregnancy intervals less than 13 weeks were double those at intervals of 104 weeks or longer. The percentage of preterm deliveries decreased as the pregnancy interval length increased. Overall, more than a quarter of the women in the study had an interpregnancy interval of less than one year.(59) Merry-K Moos proposes a list of suggested questions that all providers

pose to women throughout their reproductive life cycle. These questions engage the woman in thinking about her desire for future pregnancies and the timing of those pregnancies, if any.(60) The evidence described above suggests that this conversation is particularly important at the postpartum visit.

Data from the North Carolina Pregnancy Risk Assessment and Monitoring Survey determined that over 45% of the pregnancies in the state between 1997-2000 were unintended.(61) Kost et al studied trends in contraceptive failure and found that 12.4% of all episodes of contraceptive use end with a failure within 12 months of initiation of use. They suggest that there is a need for increased education about the various methods, improvements in access to a variety of methods and more widespread counseling of women and men to improve communication about use and planning pregnancies.(62)

Depression

Postpartum depression occurs following childbirth, usually between 4-12 weeks postpartum, with some cases arising as far as six months after birth. About 400,000 mothers in the United States are diagnosed with postpartum depression each year, affecting about 13% of mothers. These numbers are likely low, as postpartum depression is under reported.(63) Postpartum depression symptoms can persist in many women throughout the postpartum year.(64) Women with a history of depression are at increased risk for recurrence during the postpartum period. Feinberg et al note that in a national survey, 57% of mothers who scored as depressed had not seen a professional for mental health concerns postpartum.(63) A study by Da Costa et al found that women experiencing postpartum depression scored low in all domains of the Medical Outcomes Study Short-Form-36.(65) Their study also found that multiparous mothers were less likely to engage in health

protective behaviors and that women who had a cesarean or a complicated pregnancy had decreased mental health status.(66) A less serious form of postpartum depression known as the “baby blues” is estimated to affect 50%-80% of all new mothers.(67) The *Listening to Mothers II Postpartum Survey* found that at two weeks postpartum, one in three mothers reported feeling down, depressed or hopeless (36%) or having little interest in doing things (34%) for at least several days. The study also found that 18% of the mothers reported information that suggests they were suffering from post-traumatic stress disorder due to a traumatic birth experience. Black non-Hispanic mothers (26%) were more likely to report symptoms of birth trauma than other groups. The study also found that 18% of the mothers had consulted a health care professional about their emotional or mental well-being. Mothers with birth traumas were more likely to have consulted with a health care professional than other mothers. (30)

A 2007 survey of North Carolina OB/GYNs and Family Physicians found that 79% were unlikely to use a formal screen for depression at the postpartum visit and 57% did not often ask if the woman felt down or depressed. Seventy-three percent did not usually inquire about a woman’s interest in her usual activities. OB/GYNs were less likely to ask about a woman’s social support network, to ask about her relationship with her partner, and to use a formal depression screen than family practitioners. The authors concluded that communication about postpartum depression and related psychosocial issues is limited in North Carolina and likely contributes to under diagnosis of this disorder.(68)

Breastfeeding

The positive impact of breastfeeding on mothers and babies has been well established. Breastfeeding rates have been increasing since 1990 with about 69.5% of

mothers providing their baby with any breast milk and 32.5% still breastfeeding at 6 months postpartum.(69) A recent meta analysis demonstrated that breastfeeding can reduce infants' risk of otitis media, gastroenteritis, severe lower respiratory tract infections, atopic dermatitis, asthma, obesity, type 2 diabetes, SIDS, and necrotizing enterocolitis.(70) Breastfeeding is also good for mother's health and can assist them in returning to their pre pregnancy weight. Lu and Prentice studied the current 6 to 8 week postpartum visit and its ability to improve / support breastfeeding among new mothers. They found that the postpartum visit was not associated with increased rates of breastfeeding in their large sample population. They suggest that the timing of the postpartum visit may be too late to address breastfeeding problems. They were also unable to evaluate the content of the postpartum care received, noting that there were likely to be variations in the content and quality of that visit. They also pointed out that the visit may not be enough to address all the psychological and social factors that influence breastfeeding and other related maternal behaviors.(7)

The *Listening to Mothers II Postpartum Survey* found that 10% of their respondents had intended to breastfeed but in the end did not. They offered a number of reasons for their decision not to breastfeed including "formula more convenient" (42%), "too hard to get breastfeeding going" (38%), "baby had difficulty nursing" (37%), "I had to take medicine and I didn't want my baby to get it" (24%), "I changed my mind" (18%), "I tried breastfeeding and I didn't like it" (14%), and "I didn't get enough support to get breastfeeding going" (13%). (30) These responses suggest that earlier postpartum visits might provide some additional support and counsel to some women, which might encourage

them to continue breastfeeding. The women who were breastfeeding were also likely to have questions and require support at the postpartum visit.

General Health Concerns

The Centers for Disease Control and Prevention recently reviewed Pregnant Risk Assessment Monitoring System (PRAMS) data to learn more about preconception and interconception maternal health status. For mothers who were in between pregnancies they found an overall prevalence of 17.9% for tobacco use, 15% for not using contraceptives, 16% for symptoms of depression, and 15% for not having social support of some kind. Their study found that 89% of the mothers had a check-up, 89% had received contraceptive use counseling, 30% had a dental visit and 49% had received WIC services. They also found a number of mothers at risk for recurring poor birth outcomes including: 7.5% who had just had a low birth weight baby and 10.4% who had a preterm infant. Health indicators from the preconception population found that 1.8% of the women had diabetes, 13% were overweight, 22% were obese, 2.2% had hypertension, 1.2% had heart problems and 10% had anemia.(71)

Mothers of High-Risk Infants

Mothers of premature infants, those who have experienced a fetal loss, and/or women who experienced serious health problems during pregnancy often have additional health needs. Gennaro published two articles on the topic of the postpartum health of mothers of preterm infants. Her first study in 1995 interviewed 68 mothers who delivered low birth weight babies at nine different points in time. At least 71% of the mothers in the study reported one acute care visit with 64% reporting the need to change their activities because of sickness between the time their infant was discharged from the hospital and the final six-month interview. At the last data collection point, 19% of the mothers rated their health as

fair to very poor. There were more mothers who reported poor health than mothers who were actively seeking medical care. This discrepancy suggests that mothers who are already busy interacting with the health care system on behalf of their child may have difficulty accessing care for themselves.(11) In 2005, Gennaro compared the health of 65 mothers of preterm and term infants prospectively for the first four months following delivery. The mothers in the study kept health diaries and were interviewed every month using the Health Review Questionnaire. The findings indicated that the most common symptoms for all mothers were headaches and colds. Mothers of preterm infants reported that between one and four days each month they were not able to conduct their usual activities. The symptoms continued through the fourth month with mothers of preterm infants reporting feeling ill at least three days each month.(10)

Holditch-Davis et al conducted semi-structured interviews with mothers of premature infants at 6 months adjusted age. They found that all of the mothers had experienced at least one posttraumatic symptom with many experiencing three symptoms of distress. The study also pointed out that post traumatic stress triggers related to the birth of an infant preterm could also trigger past traumas for mothers.(72) Similar to the results of this study, Singer et al found that 10% of mothers of very low birth weight babies reported severe symptoms of psychological distress – 5 fold the rate for term mothers. They also found that almost one-third of the mothers had clinically meaningful levels of depression and anxiety.(73) Ahn found that mothers of preterm infants reported higher levels of fatigue, more negative affect, and less functional status at 3 months postpartum than mothers with full-term infants.(74) Wallerstedt et al highlight the unique nature of perinatal grief, pointing out that the death of an infant and/or loss of a pregnancy is a major life trauma event. They note that women who

have experienced a fetal or infant demise are at increased risk for miscarriages, obstetric complications, subsequent poor birth outcomes, and psychosocial issues including couple discord. Interconception counseling is highly recommended for these mothers.(75)

Maternal Health Conditions as Markers for Chronic Disease

Women who develop gestational diabetes and hypertension during pregnancy enter into a postpartum risk category for Type II diabetes and chronic hypertension in the future. Lawson considered the psychosocial implications of the pregnancy “transformed” by gestational diabetes and suggest that supplemental support postpartum is important. Their study consisted of 17 women who were recruited based on a standardized 3-hour oral glucose test at 28 weeks gestation. Women were interviewed while they were pregnant, and a second time at six weeks postpartum. Many of the women had fears that the diabetes was coming back after they gave birth – even if their blood sugar levels had returned to normal. One woman wished she still had her glucose monitor and several interpreted a headache or an increase in thirst as signs the diabetes was coming back.(76) Feig and colleagues mailed surveys to women who had previously participated in a large cohort study. They also used the Medical Outcomes Short Form-36 scales for physical function, vitality and self-rated health was used. This study concluded that the diagnosis of gestational diabetes mellitus may lead to long-term changes in how women view their own health status as well as that of their child.(77) This change is not entirely inappropriate as these women are at high risk for Type II diabetes. However, these women also require access to services to help them adopt health behaviors to decrease their risks and to respond to their knowledge of increased risk.

Thomas’ in-depth interviews with women who had experienced a medically complicated pregnancy offered some insight into potential issues. In particular, she suggested

that the anticlimactic nature of postpartum care is particularly difficult for women whose medical conditions continue to present challenges. Once the intense focus on the birth of a healthy baby is over, these women may feel left behind by their obstetricians.(78) Haas studied women whose infants had been born premature and were part of an early intervention program. Participants were recruited from sites around the country with 985 mothers included in the study. Study staff assessed the mother and infant at 40 weeks gestation then at 8 intervals until 60 months postpartum. The study found that by the fifth year after delivery, 29.7% of the women had been hospitalized for a non-pregnancy related condition. After five years, 16.9% of the women said they were in poorer health. According to the paper, this study was the first time that continued, substantial morbidity and hospital use of women with a premature infant had been reported.(12) Finally, Hamilton published an article affirming that women with high-risk pregnancies have continued high health care resource use over the first postpartum year. This study used a secondary analysis from data collected during a randomized clinical trial. The cohort included 171 African American women. During the first year postpartum, 17% of the women were re-hospitalized and 32% had acute care visits. Women with chronic hypertension and GDM had the highest rates of health care usage. The author suggested that this data indicated a need for improved education regarding the signs and symptoms of complications postpartum as well as early detection of more common health care problems.(13)

Maternal Role Attainment

Mercer, a respected leader in the field of maternal role attainment states, “The transition to motherhood is a major developmental life event. Becoming a mother involves moving from a known, current reality to an unknown, new reality.”(79) This quote is a good

summary of the findings of a number of studies on this important topic of what it means to become a mother. Nelson describes five thematic categories that women experience and resolve as they transform into their role as mothers. These include: commitments, daily life, relationships, self, and work. Some of the tasks in these themes include: accepting responsibility for caring for a child; learning the daily tasks of mothering; adapting to a changed relationship with partner and family/friends; facing the past and oneself; dealing with conflict; and the search for balance. Her work suggests that women are often overwhelmed and largely unprepared to deal with the maternal transition. She recommends that health care providers equip expectant mothers with more information and coping techniques for their new role while they are still pregnant. She also suggests that providers encourage women to embrace the reality that it will take several months to adjust to their new life. Increased support beyond the birth of the baby and individualized assessments are also recommended with the postpartum visit a good place to begin to provide this care.(80)

O'Reilly's research with second time mothers found that while these women had already successfully negotiated the major transition to motherhood, they may have special concerns and needs that also remain unaddressed.(81) The international 30 year trend toward older, first time motherhood introduces greater complexity in maternal transition and in the kind of support needed from health care providers. While older mothers have a lot of strengths, in spite of their "intense preparedness for motherhood, older first-time mothers are at risk for reality shock because of their high level of anticipation coupled with little prior experience with infants and the great significance they tend to place on the mothering role."(82)

Martell describes postpartum adjustment as heading toward a new normal. Her work suggests that providers are not meeting women's health and psychosocial needs during the early weeks postpartum. She offers three specific adjustment phases during the first weeks postpartum which include: appreciating the body, settling in, and becoming a new family.(83) Mercer's qualitative research with mothers described several stages in becoming a mother. These include: a) commitment and attachment, b) acquaintance, learning and physical restoration (2-6-weeks postpartum), c) moving toward a new normal (2-4 months), and d) achievement of maternal identity (4 months). She notes that mothers experience this transition differently with some mothers such as those with premature infants being delayed at various stages in the journey.(79)

Finally, research that is focused on listening to women found that many women felt totally unprepared for their early motherhood experiences.(84) Other first time mothers described "a conspiracy of silence" about the realities of motherhood.(79) The book, *I Was a Really Good Mom before I Had Kids*, lends voice to women's many joys and challenges in becoming and being mothers. One mother in the book provided a poignant summary of what some new mothers feel, "I thought I'd fall in love with my baby and it would complete my life. It wasn't that way for me. There's a lot of pressure on women to feel that this is the end-all-and-be-all when you have that baby."(85) The authors summarize the experience of hundreds of mothers and found that many are overwhelmed and stretched beyond belief.

Overall, the literature on maternal postpartum needs tends to focus on topic specific issues such depression and contraceptives. Some authors have taken a more global look at less catalogued symptoms such as fatigue and maternal role attainment. They have also found symptoms, which result from exhaustion and worries about motherhood are often eclipsed by

the demands of the infant. Nelson highlights that, “In spite of the understanding of the difficult nature of transition, support for new mothers continues to focus either on preparing women for the labor and delivery experience or the physical well-being of the infant. Many new mothers remain unprepared for the reality of new motherhood.” (82) As the evidence of the multiple health needs of postpartum mothers grows, so does the need to respond to them effectively.

Aim 1: Utilization of Postpartum Care

Several studies have been published that describe the barriers faced by women in accessing a postpartum visit. Bryant et al studied the Healthy Start population at four sites to identify variables associated with compliance with a postpartum visit. Their work found a number of barriers including, unstable housing, transportation problems, and difficulties communicating with providers.(86) Kogan et al studied a group of women in Massachusetts who were part of the Maternal and Infant Care program. They found that the strongest indicator of whether a woman returned for postpartum care was her use of prenatal care. Women with inadequate prenatal care were the least likely to receive postpartum care. They also found that women with lower levels of education, less than 26 years of age, and higher parity were less likely to get postpartum care as were women who experienced a stillbirth or infant death. During the study period, there was a decrease in the number of African American women who received postpartum care. At the same time, there were a number of obstetricians who withdrew from the Medicaid program. The authors suggest that the increased wait times and lack of providers may have also influenced utilization rates by African American women.(87)

Loomis' work with mothers who had poor birth outcomes suggests that mothers are less likely to take care of their own health needs when their insurance coverage expires, they are preoccupied with their new infant, and are feeling stressed by their lives.(88) The Mountaineer Interconception Community Network Program offered case management services to women who had a poor prior pregnancy outcome. An evaluation of the program found that case managers were frustrated by their limitations in serving women particularly around the availability resources and referral. Gaps included medical care, grief support, smoking cessation, and domestic violence service. Some of these issues emerged only because of the close relationship between the case manager and client. From the women's perspective, most viewed the relationship in a positive light, although some noted that the time commitment of the program was too long (greater than a year).(89)

Pistella and Synkewecz surveyed 78 health care professionals and care coordinators who provide maternity case management services to women at a Healthy Start site. They found that most Healthy Start participants were not knowledgeable about the purposes of the postpartum visit, prenatal education about the visit was insufficient, hospital tracking of missed postpartum appointments was not routine, and that rescheduling and delayed timing of missed appointments increased pregnancy risk. Mothers were more likely to get postpartum care if they had low cost transportation and could also get services such as WIC and well-childcare for their baby. The providers offered a number of recommendations to improve postpartum care including: earlier timing of the postpartum visit; improved systems for tracking postpartum appointments; community care sites and home visiting; coordinated postpartum maternal and infant care; increased patient knowledge about the visit; and increased postpartum psychosocial and environmental services.(90)

York et al studied the relationship between prenatal care utilization and postnatal patterns of health behavior among high-risk minority women. They found that women with inadequate or no prenatal care were less likely to attend postnatal visits, well-child visits, acute care visits, and complete their children's immunizations.(91) Hulsey et al studied a convenience sample of 518 low-income pregnant and postpartum women. They found that multi-parity was a predictor of a missed postpartum appointment with this group of women three times more likely to miss their appointment. They also found that community-based education about the value of prenatal and postpartum care was needed.(92) A study of teenagers attending an adolescent oriented maternity clinic found that offering an incentive for the young mothers to attend their postpartum visit significantly improved compliance. (93)

Lu and Prentice conducted a survey that described the use and nonuse of the postpartum visit as well as to determine the impact of the visit on breastfeeding duration. This published report was the first on postpartum care utilization based on a nationally representative sample. Lu suggests that the quality and content of the postpartum visit may vary among providers and that there is little information available to assess the content of the visit. He proposes that not all women who receive a postpartum visit receive the counseling and services they need. The study found that women who had no prenatal care, less than a high school education, or a household income of < \$20,000 were at greater risk for non use of the postpartum visit than other women. The authors also concluded that more research is needed to reevaluate the timing, content, and delivery of postpartum care.(7)

Chu and colleagues in the Centers for Disease Control and Prevention's Division of Reproductive Health utilized national Pregnancy Risk Assessment and Monitoring Surveys

to analyze the prevalence of postpartum visits among women with live born infants. They found that the overall prevalence of postpartum care visits was 89% although rates were significantly lower in populations such as women with 8 or fewer years of education (71%) and women who did not receive prenatal care (66%).(94) A growing number of women in the United States are resorting to Emergency Medicaid to pay for the delivery of their infant. Undocumented immigrants and legal immigrants who have been in the country less than 5 years are not eligible for Medicaid. While Emergency Medicaid covers hospital costs, it does not cover follow up out-patient visits, including the postpartum visit. The *Listening to Mothers II Postpartum Survey* found that of the 6% of respondents who did not have a postpartum office visit the leading reasons were the following: “I felt fine and didn’t need to go” (35%), “too hard to get to office” (14%), and didn’t have insurance (10%). The mothers in the survey traveled about twelve miles each way for their maternity care.(30)

The review of the literature did not uncover studies comparing postpartum care utilization based on site of prenatal care. In many states, local health departments have the capacity to provide a host of services for low-income new mothers and babies. These may include: smoking cessation counseling, postpartum home visits, nutrition counseling and food provision – WIC, family planning, and well-baby care.(95) An informal, unpublished survey of regional public health nurse consultants in North Carolina conducted by Alvina Long-Valentine suggested that there are a number of barriers to access of postpartum care in local health department. These included: lack of transportation, lack of childcare, children not being welcome at the postpartum appointment, and women not realizing the importance of this visit. Other frequently reported reasons were that dispensing of birth control in the hospital decreases women’s compliance with the visit. Others noted that new mothers are

sleep-deprived, forgetful, busy, overwhelmed, and some may be depressed. Financial issues such as an outstanding prenatal care bill and the termination of Emergency Medicaid may make some women reluctant to return to the clinic. Religious beliefs, lack of partner support, domestic violence, substance use, immigration status, and language barriers were also reasons given for poor compliance. From a clinic perspective, inconvenient hours and poor customer service, (long waits during appointments and difficulty getting through on the phone to schedule appointment) were significant barriers. The health workers noted that some women are back at work before 6-weeks postpartum, while others may not return because they are still bleeding, are unwilling to have a pelvic exam, or may be pregnant again. Others feel they can't get pregnant, particularly if they are breastfeeding, and some women are not sexually active. Migrant families may move, and other women move in with different family members after delivery, making it difficult to track them down to schedule their postpartum visit. (96) These findings have a number of similarities to barriers demonstrated by other studies. More research should be conducted to better understand the relationship of enhanced services availability and postpartum care utilization among low-income women.

Aim 2: Postpartum Visit Services

Chu and colleagues describe the postpartum visit as an “opportunity to assess the physical and psychosocial well-being of the mother, counsel her on infant care and family planning, and detect and give appropriate referrals for preexisting or developing chronic conditions such as diabetes, hypertension or obesity.”(94) The Association of Reproductive Health Professionals has an online postpartum counseling reference guide for clinicians and a six-week postpartum check-up list for mothers. The check-up list for mothers encourages

them to talk with their provider about weight loss, nutrition, and exercise as well as about their physical health, emotional adjustment, and sexuality and contraception.(97) The clinician reference guide suggests that three important areas to be covered during the postpartum visit are 1) diet, nutrition and exercise, 2) postpartum mental health, and 3) sexuality and contraception. They provide comprehensive information for providers on a wide variety of topics within each of these areas with additional information for the physical exam, which should include calculation of body mass index and a breast examination.(98) The timeframe of this visit from 6 to 8 weeks postpartum is based on medical tradition rather than a specific physiologic maternal need. This tradition has been embraced internationally, including by the World Health Organization. The basic content for this visit generally includes: counseling for contraception, breastfeeding, screening for depression, and examination to determine physical return to a non-pregnant state. The American College of Obstetrics and Gynecology along with the American Academy of Pediatrics broaden the focus by including initiation of preconception care for any future pregnancies.(15) They did not, however, clearly define what this preconception care should entail. Lu et al's work is an important part of this dialogue, with evidence-based recommendations as to the care women need during the interpregnancy period. They focus on a broad array of risk assessment, health promotion, clinical, and psychosocial interventions. While their model encompasses expanded visits for women in the postpartum period from one to four, they retain the standard 6-week postpartum visit as an important component of care.(17)

For the purposes of this research, it is necessary to describe some of the components of a comprehensive postpartum visit. This is not an attempt to create a gold standard, rather a way to outline some of services a woman could receive to transition her from prenatal to

well-woman care. Ideally, the postpartum visit should be a comprehensive visit, individualized to each woman's needs. Since the components of care listed below are not formally endorsed by a professional medical organization, it would not be expected that providers would follow this outline for care routinely. However, these components, based on the literature described above, begin to map out a potential list of important topics and services to be provided during this visit. The items listed below are based on the literature as it currently exists, and draw on the work Lu et al. It also pulls from a series of interconception health algorithms designed by Merry-K Moos.(99) The final two items on the list are for women with specific health conditions or pregnancy outcomes.

Components of a Comprehensive Postpartum Visit

- The woman should receive a postpartum visit between 6-8 weeks after giving birth.
- The woman should know the health care practitioner who provides her postpartum visit either from having received some prenatal care from the provider or having been with this practitioner during labor and delivery.
- Provider should review the prenatal record and patient's medical history prior to visit.
- Physical examination to include:
 - Weight and BMI calculation
 - Blood pressure
 - Breast examination / Self examination teaching
 - Papanicolaou smear and pelvic examination as indicated
 - Review of immunization status and vaccination as indicated
 - Screen for sexually transmitted infections as indicated

- Inquire about women's other physical concerns including: headaches, backaches, lack of libido, hair loss, return to fertility, and incontinence
- Assess breastfeeding status. Provide support as indicated.
- Discuss reproductive life plans and contraception options. Provide contraceptive method or develop follow up plan.
- Assess nutrition and exercise habits. Discuss consumption of multivitamins daily. Provide information about recommended modifications to diet and exercise; counseling to decrease postpartum weight retention and to achieve a healthy BMI.
- Psychosocial Evaluation including: depression, family violence, and maternal/infant attachment issues.
- Counseling and referral for health / behavior problems identified during prenatal care. These include but are not limited to: infection risk, tobacco use, poor oral hygiene, substance abuse, family history of heart disease, weight, closely spaced pregnancies, and/or high levels of stress.
- Referral to social services, care coordination, mental health counseling, and parenting support groups as indicated.
- Review when the woman should next be seen for routine well-woman care as well as for other follow up steps as needed.
- Women with health conditions prior to and/or during pregnancy require additional services including:
 - Pre-gestational diabetes: physical exam to include cardiovascular, neurological and dilated retinal exams, glycosylated hemoglobin, serum creatinine, and 24-h urinary excretion of total protein and/or albumin, and

measurement of thyroid stimulating hormone and/or free thyroxine level in women with type I diabetes and electrocardiogram if the diabetes is long-standing. Issues around adherence to diet and treatment should be reviewed.

- Gestational diabetes: 50-g oral glucose tolerance test, reinforce importance of healthy eating and exercise.
 - Chronic hypertension or hypertensive disorders during pregnancy: blood pressure screened in the weeks postpartum until it has returned to normal and then recheck at 3-6 month intervals, drug therapy if indicated, support for adherence to treatment protocol.
 - Underweight, overweight or obese: BMI calculation, counseling about healthy weight and referral for weight gain/loss therapy. Review any exercise related restrictions or recommendations.
 - Anemia – iron deficiency: check blood and prescribe iron supplements as needed
- Women who had a preterm birth, an infant born with a congenital anomaly, and/or a fetal or infant demise require additional services including:
- Details of the preterm birth or congenital anomaly followed by a work up for known etiologic pathways (infectious-inflammatory, vascular, neuroendocrine, genetic, exposure to teratogens, and pathologic uterine over-distension)
 - Follow up with genetic counselor (birth defects)

Aim 3: Health Care Provider Attitudes and Practices

McGovern comments, “The traditional medical perspective of the postpartum period refers to the time after childbirth that is required for the reproductive organs to return to their non pregnant state, a process that takes approximately 6-weeks. Many physicians perceive this time as one requiring little assistance other than the recommended single postpartum visit.”(33) In general, the postpartum visit receives relatively little guidance and monitoring on the part of professional organizations. A standard medical protocol includes counseling for contraception, breastfeeding, depression, and the physical return to a non-pregnant state. Blenning and Paladine note that the four general categories for the postpartum visit include: assessment for medical complications, breastfeeding, postpartum depression, and contraception.(100) Cheng et al note that the major component of the routine 6-week postpartum checkup is limited to vaginal examinations and contraceptive education.(101)

An expanded perspective on the content of the postpartum visit is emerging. The *Guidelines for Perinatal Care*, produced by American College of Obstetrics and Gynecology and the American Academy of Pediatrics, recommends that women receive a postpartum visit 4-6-weeks after giving birth. They suggest that the content of this visit should include: assessment of the physical and emotional status of the mother; support for breastfeeding; family planning services; and the initiation of preconception care for any future pregnancies. They also suggest that providers review a woman’s immunizations; refer for needed additional services such as for chronic conditions; pay attention to maternal and infant bonding; and counsel regarding nutrition and sexually transmitted diseases.(102) Guidelines set forth by the National Institute of Health and Clinical Excellence (NICE) in England provide specific information about the care to be provided to new mothers and infants. In

their model, mothers have a number of points of contact with health care providers and home visitors in the weeks before the 6-8 week visit. The guidelines suggest that the clinician review the women's physical, emotional, and social well being as well as conduct additional screening with her medical history in mind.(103)

Lu and colleagues published research in 2006 that defined a multitude of interventions that should be done during the interconception timeframe. As part of this work they began to define the content of internatal care, with a focus on clinical care. They note that this is a field of work, which requires further research, including studies evaluating the effectiveness of the various components of internatal care. As part of their proposed framework, they recommend that postpartum/internatal care include: risk assessment, health promotion, clinical, and psychosocial interventions, with special consideration for high-risk mothers. The authors identify specific guidelines for women with chronic health conditions and a model based on etiologic pathways for women who had a preterm baby. They recommend priority areas include screening for family violence, infections, nutrition, depression, and stress. They also recommend that providers offer health promotion by counseling about breastfeeding, back to sleep, exercise, exposures, family planning, and folate supplementation.(17)

After reviewing 140 randomized control trials about the specific management of certain postpartum medical conditions, Levitt and Associates with the Postpartum Research Group suggest that there is a need for stronger, evidence-based practice for the postpartum visit.(104) They note, for example, that data are lacking in regard to the effectiveness and optimal timing of the postpartum Pap Smear – a common practice.(105) The consistency of providers' practice in following protocol for certain high-risk conditions was called into

question by several studies. Smirnakis found that only 37% of women with gestational diabetes mellitus (GDM) received the postpartum screening tests recommended by the American Diabetes Association (ADA).(106) Russell et al conducted a retrospective study of 344 women with GDM and found that less than one half (45%) of women had received glucose testing per ADA recommendations. Of the women tested, 36% had abnormal glucose tolerance.(62) Baker et al surveyed 1,002 providers in North Carolina and found that only 21.3% of the respondents report always screening for GDM postpartum. Factors associated with not screening were patients lost to follow up, patient inconvenience, and inconsistent screening guidelines.(107) Samwiil's study of 257 women who had pre-eclampsia during pregnancy found that only 28% of the women were screened during the postpartum period to be sure they had returned to a normal state.(108) Sobey notes that women are not always screened for postpartum depression with as many as half of all cases undetected.(67) Iron deficiency and anemia screening is another risk factor that is not consistently addressed by providers during the postpartum visit.(45) Curtis et al reference a survey that focuses on the provider's role in promoting folic acid supplementation. The reasons physicians gave for not always sharing information about folic acid were lack of knowledge (39%) and lack of time (30%).(109) While studies of provider recommendations about folic acid supplementation at the postpartum visit have not been conducted, it is possible that the provider barriers mentioned in the survey above will also be barriers for this visit. In the Listening to Mothers Survey, about one third of mothers who received a postpartum checkup felt their health issues were not addressed.(110)

Concerns have been expressed about the ability of the postpartum visit to address women's health needs and the lack of attention that the current prenatal care system offers in

regard to women's well-being outside of maternity care.(2, 7, 8, 111) Kaaja and Greer completed a systematic review of all pregnancy conditions that relate to the development of chronic disease. They conclude that "pregnancy can unmask a woman's potential for disease, thus providing a window to her long-term health outlook and presenting opportunities for primary prevention."(112)

Gaudet suggests that "the long lag time from hospital discharge to postpartum visit is another reminder of where the medical system focus lies: on the body and only the body." She continues that, "although on a physical level women tend to heal rapidly after childbirth, on a psychological and soul level, the adjustment is a much longer process."(6) A review article by Gregory and colleagues promotes preconception, post gestation, and interconception visits that include patient specific content based on where the woman is in her reproductive life span. The authors suggest that there should be an agenda to increase awareness about the public health value of these visits, the proposed content of the visits, and incentives put in place for these visits at the individual and health system levels.(53) Very few physician surveys have been conducted regarding attitudes and practice around preconception care issues.

OB/GYN and CNM Role in Primary Care

Ongoing debate exists about the role of obstetricians/gynecologists in women's primary care. Scholle points out that studies show that "for young women of childbearing age, OB/GYNs provided reproductive preventive services and principal care but rarely served roles of coordinating services with specialist or providing first contact care for new problems."(113) This is an important consideration in thinking about who cares for new mothers after the completion of their 6-week postpartum visit. It may also influence the

traditional content of that visit. In the mid to early 1990's there was a growing effort to formalize the role of OB/GYNS as primary care providers. This shift was in part driven by changes in the health care system and the widespread belief that women should be their own gatekeeper in terms of when they would receive services from an OB/GYN. ACOG responded to the new emphasis on primary care by implementing a curriculum with augmented information about primary care for OB/GYN resident education.(114) Kuffel et al surveyed directors of residency programs about this addition of training requirements. Responses were mixed with 53.4% thinking the new training mandate was good, 43% who disagreed, and 3.6% who neither agreed or disagreed.(115) In 1998 during a keynote address, Dr. Vicki Seltzer, President of the American College of OB/GYNs, noted that in keeping with ACOG's logo "women's health care physicians" most of this group of providers fill the role as the principal or only physician for a substantial subset of patients. She stated that, "Being a woman's primary physician means being able to take care of common problems and placing an emphasis on prevention wellness, and early detection. I think that more than any other medical specialty, obstetrics and gynecology has emphasized and achieved a great deal in promoting preventive care and general women's wellness." Seltzer also referenced a 1992 study in which more than half of all OB/GYNS indicated that they spend more than half of their time providing primary and preventative care.(116)

Less than a decade later, Stovall et al conducted a regional survey of OB/GYNs and found physicians to be divided regarding their status as primary care providers. The majority of providers did not want to include primary healthcare in their practice.(117) These results are interesting when compared to a study by Henderson and Weisman who found that women in their early reproductive years (18-34) were more satisfied with care coordination and

comprehensiveness when their regular provider was a reproductive health specialist, primarily an OB/GYN physician. The authors found that comprehensiveness of primary care was improved when a woman saw an OB/GYN provider and a non-OB/GYN generalist, but that the problems of continuity and coordination of care erased the advantage.(118) A survey of women who considered their OB/GYN as their primary care provider found that OB/GYNs were more likely than other physicians to provide reproductive health services including preconception care and counseling around STDs. Yet they were less likely to provide counsel about diet and exercise, mental or emotional problems or perform cholesterol screening.(119) Using a nationally representative survey, Scholle et al found that 21.7% of OB/GYNs in private offices and 22% of OB/GYNs in hospital-based out-patient clinics identified themselves as primary care providers. The survey also found that there were strong variations in the role of obstetricians/gynecologists in women's primary care. Their data suggest, "some OB/GYNs are embracing the primary care role and changes in the content of care can be found. Still, the changes in practice are minor at this point, and the content of obstetrics/gynecology visits primarily address traditional reproductive health needs."(113)

Alongside the debate among OB/GYN physicians around role in primary care, the American College of Nurse-Midwives has also considered role expansion into the provision of primary care. According to Sullivan, historically midwives have served as de facto primary care providers for vulnerable and underserved populations. The midwifery model emphasis on family-centered, community-based care as well as their focus on health promotion, counseling, education and excellence through coordination of referrals suggests that they are appropriate for providing primary care per the Institute of Medicine's definition.

The IOM defines primary care as “the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community.”(120) However, a 1994 survey by Murphy found that midwives provided many preventive services to women but the emphasis was on services related to reproductive or breast health concerns.(121) Sullivan notes that midwives are similar to OB/GYNs in being conflicted about moving into primary care as well as in the kind of care they provide. And although they do provide primary care services, often not reimbursed, there is no legal mandate for the designation of nurse midwives as primary care providers in most states. In fact the breadth of their practice is shaped by the various practice acts for midwives, which are state specific. Sullivan highlighted that if nurse midwives have an interest in providing primary care, they must continue to develop their primary care knowledge and skills.(120) Published in 2002, Oshio and colleagues published a task analysis of American nurse-midwifery practice from 1999-2000. Their national survey of nurse midwives found that responsibilities had expanded within the domains of non reproductive primary health care and gynecologic care of the well-woman, including advances in assisted reproductive technology, but there was a diminished role in the provision of newborn care. The Association of Certified Nurse Midwives Certification Council then reconfigured their examination blueprint to add 5-10% for primary care and 15-20% for well-woman / gynecology issues.(122)

The *Listening to Mothers II Postpartum Survey* found that following the completion of a pregnancy, 47% of mothers relied on a family medicine physician for their regular medical care. Twenty-one percent continued to see an OB/GYN, 11% an internal medicine

physician, and 11% said they did not have a regular provider. The other respondents reported seeing midwives, nurse practitioners, and physician assistants for their care. These data suggest that women do indeed turn to their OB/GYN providers for ongoing health care and interconception health needs.(30)

Aim 4: Health Care System Impact on Postpartum Care

The postpartum visit, the last visit included in the prenatal care package, is generally excluded in the calculation of national data about the adequacy of prenatal care, which only includes visits up until the delivery of the infant. The adequacy of prenatal care index is widely used in the United States and considered an important marker of the quality of care mothers receive. The exclusion of this visit relegates its status to a lower level of importance, separating it from prenatal care but not giving it an appreciated place in the scope of maternal health. Global billing systems for prenatal care further complicate access to information about the postpartum visit. The standard prenatal care package often is billed following the delivery of the baby – not the final postpartum visit. This can serve as a disincentive to health care systems to provide and promote this visit. Fortunately, the Health Plan Employer Data and Information Set (HEDIS) reports perinatal care measures, including the postpartum visit. This is a very important opportunity as the data are reported over time for the nation and each state. The State of Health Care Quality 2007 report notes that only 79.9% of women with private insurance received a postpartum visit, a figure down from the previous year. Women with Medicaid are less likely to receive a postpartum visit, with only 59.1% of this population receiving this care. In a positive trend, that number has improved 2 points from the previous year.(123) Unfortunately, HEDIS and other databases often do not include women who have experienced a fetal death or stillbirth, a group of mothers who have a great

need for follow up care. Few clinics and private offices seem to track their postpartum visit utilization rate, including the UNC Obstetrics Program.

The Healthy People 2010 objectives for maternity care focus primarily on pregnancy and immediate birth outcomes. Increasing the number of women who receive a postpartum visit 4 to 6-weeks after delivery has been identified as a HP 2010 objective. Although there are a host of postpartum complications, only one of these problems, postpartum depression, was included as an indicator.(124) The World Health Organization's recommendations for postpartum care include: medical assessment of complications, mother-infant bonding, breastfeeding, community and partner support, and family planning. However, as Cheng highlights, they do not address the management of postpartum discomforts, emotional disorders, and maternal role attainment. (101) Cheng et al point out that the Pregnancy Risk Assessment Monitoring System, a national survey which monitors maternal behaviors and experiences, does not include questions about maternal postpartum morbidities in its core questionnaire. Many Title V programs focus on services for pregnant women and children, with a lack of emphasis on services for the mother during the postpartum period. This, again, fosters a disincentive for collecting data and expanding services for this group of women. According to Cheng et al, "no specific national strategies, plans or policies are in place to encourage new mothers to obtain postpartum health care." (101)

The National Business Group on Health recently released a toolkit for employers on the topic of investing in maternal and child health. Of the services they recommend, only two relate to mothers in the first year postpartum. The first stipulates one 6-8 week postpartum visit. The second is support for breastfeeding. While the plan supports preconception health care, they do not make the connection between the need for interconception care and linkage

of new mothers to other services.(125) Korst et al, have been working on the development of a framework for maternal health quality indicators. They included two indicators that relate to the postpartum period. The first is the receipt of a comprehensive postpartum visit that includes; preventive health maintenance, health promotion and education about parenting, breastfeeding, contraception and depression, and the management of persistent medical conditions exacerbated by pregnancy. The authors note the positive association between postpartum visit utilization and increased compliance with well-child visits and child immunizations as an argument for the inclusion of this indicator. However, the authors also note that the ability to track and monitor the content of the visit would be difficult. They also list increased screening for postpartum depression as an important indicator.(126)

Paul Wise of Stanford University gave a keynote address during the National Summit on Preconception Health and Health Care in October 2007. His presentation focused on some of the larger policy issues around promoting the health of women before and in between pregnancy. He suggested that the framework commonly used in public policy and among advocates of putting the needs and well-being of children above that of their parents has been partially responsible for the neglect experienced today for issues such as women's wellness and preconception care. He argued that until the public debate can embrace the importance of caring for the woman, mother, and father, we will continue to ignore important prevention opportunities.(127) Wise's view is an important perspective to be considered in the development of a policy paradigm shift from a fetus/infant-focused environment to more of a woman-centered environment. The challenge remains that children offer a compelling case for policy change on many levels, particularly around arguments related to cost/benefits of preventive care.

The American College of Obstetricians and Gynecologists has recently stepped forward with a reform agenda for health care for women. Their agenda includes primary and preventive services. They include mention of the postpartum examination, family planning and specify care across the age spectrum. Their approach might be limited as far as postpartum/interconception care, however, their platform of covering all women and including primary services is key.(128) While this dissertation focuses on the United States, the literature suggests that other nations around the world have a different attitude about the services to be provided to new mothers. In many European countries, for example, new mothers receive a series of home visits for many months after the birth of their baby. They also receive extended, paid maternity leaves and may receive other benefits such as a stipend and free bus fare. Future study should consider a review of the underlying philosophy of these nations as far as their perceived duties and benefits in relationship to new mothers. These arguments could be of use in formatting a new policy approach in the United States for expanded postpartum care and support.

Preliminary Research at the University of North Carolina

In the spring of 2006, under the guidance of the author of this study, a group of students from the University of North Carolina at Chapel Hill's School of Public Health conducted a pilot assessment of the postpartum visit at the NC Women's Hospital. The study's intent was to explore the topic of the postpartum visit at UNC to determine if more in depth research was required. The students interviewed 14 health care providers at UNC who have a role in prenatal/postpartum care. These providers included: four perinatal care specialists (2 nurses and 2 social workers), two maternal fetal medicine specialists, one midwife, two obstetricians, two nurses, one maternity care coordinator, one family practice

physician, and a genetic counselor. The data they collected from these providers suggested that there were areas for improvement in the system of postpartum care at this institution.

Most providers cited difficulty finding the pertinent issues for the postpartum visit in the hospital discharge summary, noting that it would be helpful to have the full prenatal record available for this visit. Some shared concerns about a) time limitations for the visit and b) the limited ability to refer Uninsured women to specialists. Genetic counseling services were cited as being under-utilized, particularly for mothers with poor birth outcomes. Practical suggestions for the system included: a) improve the format of the discharge summary to include a prioritized problem list; b) improve communication among specialists to improve continuity of care for women with chronic conditions; c) increase contact between providers and patients by developing a phone system for non-scheduled visit times to allow mothers to ask questions about their health or that of their newborn; and d) increase/strengthen the link between the postpartum visit and pediatric care. (129) There were a number of limitations to this survey including the fact that interviews were conducted with health care professionals working in a number of different practices – health department, family medicine, high-risk, and midwifery services. The variation in care patterns among practices and the fact that in some cases only one individual from a system was interviewed makes it difficult to draw conclusions. However, the pilot study accomplished its goal by demonstrating the need for additional research on this topic within the UNC Healthcare System.

Aim 5: Programs and Recommendations Focused on Improving Care

The literature review along with information from leaders in the field uncovered a number of programs that are working to improve postpartum care, enhance the postpartum

visit and/or offer long-term interconception care. These projects and ideas are described below.

Timing and Frequency of Visits

The literature review uncovered several ideas for new ways of providing postpartum services. (17, 130) These ideas have potential for improving care but have limited research as to their efficacy and feasibility as well as in those populations of mothers which would most benefit. This section will briefly highlight the general concepts that have been proposed. A number of authors in the literature comment that the 6-week visit is not sufficient to address women's health needs postpartum. Cheng suggests that the time limits for providing postpartum care be reconsidered. She suggests that health screening and insurance coverage for these visits should not be limited to 6-weeks rather extended to one year postpartum.(101) Lu et al offer similar but more specific recommendations for expanded care. They call for a 2 week (made in conjunction with the 2 week well-baby visit), 6-weeks and 6 months visits with flexibility for additional visits for mothers who had high risk pregnancies and/or poor birth outcomes.(17)

The Los Angeles Best Babies group in California launched a quality improvement project focused on postpartum care. Their model included a phone call to all new mothers at one week postpartum, a second call at two weeks postpartum or a visit for mothers considered high risk, followed by a final postpartum visit at 6-8 weeks. The initiative was inspired by the dismal postpartum visit rates posted for the Los Angeles area by HEDIS, particularly for mothers with Medicaid. Best Babies looked at a variety of clinical guidelines to develop their model, focusing on important indicators such as lactation support, postpartum depression screening, and gestational diabetes testing. They received a

considerable amount of resistance to the additional calls and most sites never achieved all three data points. However, they were able to make progress in increasing contact with new mothers and focusing on the final postpartum visit. The project had difficulty finding good promotional materials about the postpartum visit so they put up bulletin boards with baby photos and developed posters. They tried to coordinate the mother's visit with the well-baby check up but found that difficult to do. They looked at a variety of indicators for success including depression screening and prevalence, screening for diabetes postpartum, breastfeeding, and smoking status. The project also offered comprehensive training to health care providers and women about key postpartum topics such as obesity and diabetes.(131)

Postpartum Care Outreach, Site, and Coordination

Some authors have suggested that other types of health care providers should play a role in providing interconception care to women. Several suggest that pediatricians could play a more active role in the screening and referral of the mothers of the infants they serve, particularly for postpartum depression and family planning.(58, 63, 132) (82) Olson et al surveyed 888 pediatricians of which 57% felt responsible for recognizing maternal depression. Almost half of the pediatricians (45%) felt they had the skills to identify maternal depression and a quarter were willing to change their office approach to screening for this problem.(132) Feinberg et al studied the feasibility of an evidence-based approach to maternal depression screening in pediatric settings.(63) Klerman expands the pediatric role to include interconception care for mothers covering family planning, domestic violence, and smoking, alcohol, and drug use.(58) Nelson focused on the role pediatricians can play in helping older first-time mothers adapt to their new role.(82)

Home visits by midwives and other health workers to new mothers are an additional way that some organizations and countries provide postpartum care. Some programs focus on follow up care for high-risk neonates while others focus on pregnancy. Home visits for up to a year for all mothers are common in some countries such as the United Kingdom. In North Carolina, the Baby Love Program offers a single postpartum home visit for mothers with Medicaid. Wager et al conducted an evaluation of South Carolina's Postpartum/Infant Home Visit Program and found that nurses were knowledgeable about community services and resources for the families they serve. Information provided to mothers included: family planning, feeding/breastfeeding, medical conditions that are normal and those which require immediate attention. The nurses believed that the program had a positive impact on the health of the mothers served.(133)

Another way to expand the number of postpartum visits is to build on emerging group prenatal and parenting care models. Centering PregnancyTM and Centering ParentingTM offer group prenatal and well-baby care, using a facilitative model of leadership with a focus on social support and helping women problem solve together.(17, 134, 135) Expanding these models to cover postpartum and interconception women's health issues would be an area for further exploration.

Care coordination for high-risk new mothers is another model being used to enhance maternal health in between pregnancies. The National Healthy Start Foundation program provides coordination services for pregnant women with extended services for high-risk new mothers for two years postpartum. The emphasis was added to the program's core components in 2001 and its importance highlighted with stronger guidelines in 2005. A recent review of the 35 programs across the country providing this service found a high level

of need among postpartum women: 15.7% had diabetes, 14.4% had hypertension, 14.7% had asthma, 17% had an STD, 19.8% had periodontal disease, 20.7% were smoking, 18.6% used illicit drugs, 16% were victims of domestic violence, 19.9% had mental health problems and 26.3% had postpartum depression. The programs offered many different kinds of services in a variety of ways. In many cases, the use of tiered case management, pulling in lay health workers and professionals as needed, appeared effective. Successful projects had a link with direct clinical care through primary care clinics, hospital out-patient clinics or health departments or any other entity obligated or committed to provide care to Uninsured women. A review and synthesis of 35 Healthy Start projects found that more attention was given to infant needs than maternal needs. It was hypothesized that this reflected: national interest in early childhood development; the child was more likely to have access to health care coverage than the mother; there are better measures for child health; and families were more likely to accept assistance for their children than for the mother. The review concluded that there was a need for increased access to care for new mothers in order for unfunded mandates such as the Healthy Start interconception care project to be successful. The researchers advocated that until mothers had access to health care beyond the traditional end of Medicaid for Pregnant Women, more could be done to maximize the care women receive in the two months postpartum while they are covered by Medicaid.(136)

Nationally, there are a growing number of programs being implemented to address the interconception health needs of high-risk mothers. The Postpartum Prevention Plus Program (P4) at the University of North Carolina at Chapel Hill is one example of such a program. Funded by the March of Dimes and the Dean of the School of Medicine, this program provides medical care, education, resources and support to mothers of infants in the

intensive care nursery for one year postpartum.(137) A program in Nashville, Tennessee reaches a similar population with outreach, education, and support as well.(138) The Grady Memorial Hospital Interpregnancy Care Program provided 24 months of integrated primary health care and dental services through enhanced nurse case management and community outreach via a Resource Mother to women who delivered a very low birth weight infant, or experienced a fetal/infant demise. The program also addressed psychosocial stressors for these mothers and provided life skills enhancement.(139) An Interconception Health Promotion Initiative was conducted in Denver, Colorado to provide intensive services to a group of high-risk women who had given birth to at least one preterm infant. The mothers in this program, similar to those described above, had case managers who provided them with assistance in accessing medical care, housing, education, counseling, and many additional services.(88) The Magnolia Project in Florida also provides intensive case management to a subset of women with risk factors, including a previous fetal or infant death or the delivery of a low birth weight baby. This program provides a comprehensive assessment for each participant, the development of a care plan and goals, ongoing monitoring and services coordination, and anticipatory guidance, health education, and advocacy.(139) These projects are similar to the Healthy Start Foundation's interconception program in that they provide care coordination and support for high-risk mothers over the period of at least one year postpartum. There are differences in the background of the care coordinators and the availability of medical services for the mothers. Evaluation data from these projects and others is slowly beginning to be published. This perspective suggests that while a postpartum visit is important, high-risk mothers in particular need many more services during the first year after having a baby.

While longer term home visiting and care coordination for high-risk mothers may be an important intervention, studies are just now underway to learn how these models meets women's needs and what impact they will have on interconception health and future birth outcomes. One recently published study offers some promising data suggesting that mothers who have had poor birth outcomes and received intervention postpartum (for 18 months) had increased spacing between pregnancies and improved birth outcomes in subsequent pregnancies. The women in the study also had developed a reproductive life plan.(140) In 2006 the Center for Maternal and Infant Health at the University of North Carolina at Chapel Hill started an interconception health program for mothers with infants in the intensive care nursery. The Postpartum Prevention Plus Program (P4) provides immediate postpartum care to mothers when they arrive in the unit. Later they are formally enrolled in the program where they receive, support, education, resources, and clinical care for a year postpartum.

Summary

New mothers face a list of health issues and challenges following the birth of a baby including; depression, unintended pregnancy, return to tobacco use, unchecked diabetes, weight gain, exhaustion, social isolation, inactivity, early end to breastfeeding, untreated chronic conditions, anemia, and potential repeat poor birth outcomes. While attention continues to be focused on the health of women during pregnancy, there is a growing understanding that what happens before and after a pregnancy is of perhaps even greater importance. As infant mortality rates stagnate and premature birth rates climb, it is apparent that the time has come to reexamine maternal health care.(8, 17)

In April 2006, national guidelines for preconception health were published by the Centers for Disease Control and Prevention in partnership with a Select Panel on

Preconception Care. Of the recommendations put forward, one focuses on interconception care. Specifically, the report calls for improved monitoring of the percentage of women who complete postpartum visits and using the data to identify communities of women at risk. It also calls for enhancing the content of postpartum visits to promote interconception health. The report states that women with poor birth outcomes and/or high risk medical conditions have an increased need for interconception health care services.(141) Increasing the proportion of women who receive a postpartum visit 4 to 6-weeks after delivery is a Healthy People 2010 objective as set forth by the US Department of Health and Human Services.(124) The proposed study directly addresses this national call to action for improving services to new mothers.

In North Carolina, a large number of stakeholders have come together over the past year in response to the CDC Recommendations to define a new paradigm for addressing infant mortality through a focus on women's wellness. The Division of Public Health and the March of Dimes in particular have expressed a keen interest in a focus on interconception health and health care. The Center for Maternal and Infant Health's funding from the March of Dimes and the Dean's Office through the UNC School of Medicine to implement an interconception program for mothers of preterm infants is one example of this major interest. This interest suggests that some of the tools, analysis, and findings from this dissertation may be instructive in development of a statewide action plan for interconception care.

The literature review suggested that the postpartum visit is an important health care opportunity for new mothers. The review also found that due to issues such as provider reimbursement, transportation, consumer lack of understanding of the importance of the visits, child care, the complexity of mothers' needs, communication, and physician time

constraints, this visit may not always occur or may occur with a quality that falls short of the needs of women.(87, 90) Further, new mothers have a host of needs. Many of these issues can be identified during a single health care encounter, but require additional support and attention over time. The 6-week visit is an under-utilized, pivotal health encounter for new mothers. Improving access to and the content of this visit is an area of study that requires further research. Steps to improve the interconception health of mothers long-term, however, must build on this visit and then go beyond, continuing into the woman's first year as a new mother.

CHAPTER THREE

METHODOLOGY

Operational Definitions

The postpartum visit is defined as the health care visit a woman receives between 6-8 weeks postpartum. This is the traditional visit that is often considered the last piece of the prenatal care package. Studies have not been conducted to evaluate the total content of the care, the role of various types of providers in offering postpartum health messages, nor the impact of this single visit on future health outcomes. This dissertation will look at the utilization of the postpartum visit in one health care system, investigate the content of these visits and explore the knowledge, attitude and skills of clinicians and administrators as they shape the 6-week postpartum encounter to make practice and policy suggestions to improve its content, efficacy, and access at UNC.

Study Design

There is limited information available in the literature about the postpartum visit, particularly as a gateway to women's wellness and continued care. Due to the paucity of information about this topic, the study design for this dissertation is descriptive. The study will serve as a needs assessment to identify the services routinely provided to women during the postpartum visit at UNC as well as service gaps, facilitators to care, and barriers to care. The data collected will be cross-sectional, examining current postpartum practices in UNC

Obstetrics Program. The research for this paper includes: a patient chart review, semi-structured key informant interviews, and health care provider survey. Recommendations will be made for enhancing the postpartum visit at UNC. The methods for achieving Aim 5 are described in this chapter. The study components are pictured in Figure 4.

Study Population

The UNC Obstetric Program is the focus for this research. The UNC Obstetric Program is comprised of two groups – a faculty practice and a resident practice. The UNC Obstetric Program was selected for a number of reasons. First, it represents practices within an academic, state funded, hospital-based clinic system that utilize professionals with diverse educational backgrounds to provide care. Members of the faculty practice include: maternal fetal medicine specialists and fellows, nurse midwives, obstetricians, and nurse practitioners. Providers in the residents practice are UNC OB/GYN residents who study under the faculty providers and represent the next generation of providers. Secondly, these practices provide the opportunity to examine two specific programs within a complex healthcare structure and to have bounded target group for study. Finally, as an academic teaching institution, UNC shapes the practice of obstetricians and gynecologists who will care for thousands of women throughout their career.

In 2006, the UNC faculty practice provided prenatal/postpartum care to 983 women who delivered at the NC Women's Hospital, representing 28% of the births at NC Women's Hospitals. The faculty practice provides services at two clinic locations – one in the NC Women's Hospital and the other off campus in Chapel Hill. The resident clinic provided care to 651 women, representing 19% of the UNC births. Their services were all provided in the NC Women's Hospital obstetrical clinic. Table 1 compares the faculty and resident clinic

populations of patients to that of all the women who deliver at UNC. While Medicaid data are not included in the chart below, the resident practice sees a large number of patients with Medicaid. Faculty providers care for a larger number of patients with private insurance. From an organizational perspective, there are not major differences between the faculty and resident clinics. Both work under the same health care system (e.g. for appointments and services rendered) and share policies and procedures.

Table 1: General Characteristics of Women Who Delivered at UNC in 2006

Patient Characteristic	All Mothers Who Deliver at UNC	Faculty Clinic	Residents Clinic
Caucasian	1398 (40%)	754 (77%)	227 (35%)
African American	564 (16%)	100 (10%)	177 (27%)
Hispanic	1366 (40%)	41 (4%)	229 (35%)
Asian/Indian Asian / Other	105/16/33 (4%)	62/10/16 (9%)	9 /2 / 9 (3%)
Married Mothers	1993 (57%)	865 (88%)	274 (42%)
Single Mothers	1489 (43%)	118 (12%)	364 (56%)
Percent Preterm Birth	516 (15%)	111 (11%)	118 (18%)
Percent Fetal Anomaly	166 (5%)	29 (3%)	63 (9%)
Fetal/infant Demise	87 (2.5%)	16 (1.5%)	25 (3.8%)
Total Infants Delivered	3,482	983	651

Data Collection: Patient Chart Review

A review of a sample of faculty and resident patient records provided a clinical snapshot of the utilization and content of the postpartum visit at UNC. The purpose of this data collection was to answer research questions in Aims 1 and 2. The chart review abstracted information on over 30 variables to discern patient characteristics, postpartum visit utilization, and the services received during that visit. The data abstraction form sought to pull information about the suggested components of a comprehensive postpartum visit as described in Chapter One. A copy of the codebook is included in Appendix A. The chart

review was comprised of a sample of 400 women (200 for faculty clinic and 200 for resident clinic). This sample is representative, which includes about a quarter of the patients served by each group. The records were pulled randomly using an “every other” skip pattern. Records were drawn for patients who delivered between April 2006 and March 2007, with about 16 patient records from each clinic reviewed for each month. This allowed for potential variations in practice that may occur over the course of the year due to the nature of a teaching institution. The dates were selected to achieve results as reflective of the current system as possible. The medical record numbers and delivery dates for this group of women were obtained from Dennis Rodriguez, UNC Center for Maternal and Infant Health, Health Information Director. This component of the study was begun in August 2007 and completed in December 2007.

The patient population seen by the UNC resident and faculty clinics include: pregnant women: a) seen for most of their pregnancy, b) brought in for high-risk consultation, c) given a one time transfer of care visit in order to deliver a baby in need of comprehensive pediatric services, and d) offered in-patient care due to emergencies of pregnancy (maternal transports). For the purpose of the chart review only women who initiated prenatal care through the UNC Obstetrics Program (a) were included in the study. This subset of patients would all be expected to receive a postpartum visit at UNC.

UNC does not currently have an electronic prenatal record. Each prenatal patient has a paper chart that includes a 12 page Perinatal Record. Data from the Perinatal Record are taken off the paper chart after hospital discharge, reviewed, and entered into a database that links to the UNC Web Clinical Information System (WebCIS) to generate hospital discharge summaries. Once the discharge data have been abstracted from the chart, it is sent to billing

then to medical records. The Perinatal Record is not available to the clinician at the postpartum visit. The hospital discharge summary follows a template, which includes: basic patient demographic information, any major maternal health conditions, complications of pregnancy, birth outcome, some prenatal and hospital lab results, and limited information about decisions regarding breastfeeding and contraceptives prior to discharge. This summary is available in the hospital's central patient database, WebCIS. Subsequent visits to UNC are directly recorded into WebCIS. Relevant examples include, the 6-8 week postpartum visit, wound checks, psychiatric consults, specialty clinic visits, and emergency room visits. All laboratory results are included on WebCIS – including those taken prenatally. The Postpartum Visit Note is dictated by the provider and transcribed directly into WebCIS. The detail of the data in the electronic note is dependent upon the detail given in the provider's dictation. The visit notes follow a very general, broad template that leaves a number of gaps in data available and creates wide variability in the information recorded.

The A2K system is a billing and administrative database that operates the appointment scheduling at UNC. A2K data were used to confirm the receipt (or lack thereof) of a postpartum visit for patients who do not have a record of such a visit in WebCIS. Medical record numbers for 97 patients were sent to Kelly Felton who has access to the A2K system for the OB/GYN Department. A review of the data in the A2K system affirmed that 330 women had received a visit coded as postpartum at approximately 6-weeks. Of this group of women with a postpartum visit, 24 had a confirmed visit but the content of the visit was not available because a note had not been dictated to WebCIS. This also confirmed that 70 women did not have a WebCIS record for a postpartum visit and had not had an appointment scheduled / billed at UNC.

Women who are admitted to UNC are supposed to have a health and physical profile (HNP) entered into WebCIS. Only 3% of the sample population had an HNP in WebCIS. This information would have been useful to have to order to confirm health indicators such as weight, key conditions, and blood pressure.

A chart abstraction form was developed and approved by the IRB. The abstraction form collected data on patient characteristics including age, race/ethnicity, Medicaid status, parity, and residence. The form also collected information on ten key health indicators that could be addressed during a wellness focused postpartum visit. These items are included in the Components of a Comprehensive Postpartum Visit as described in Chapter One. The markers reviewed were:

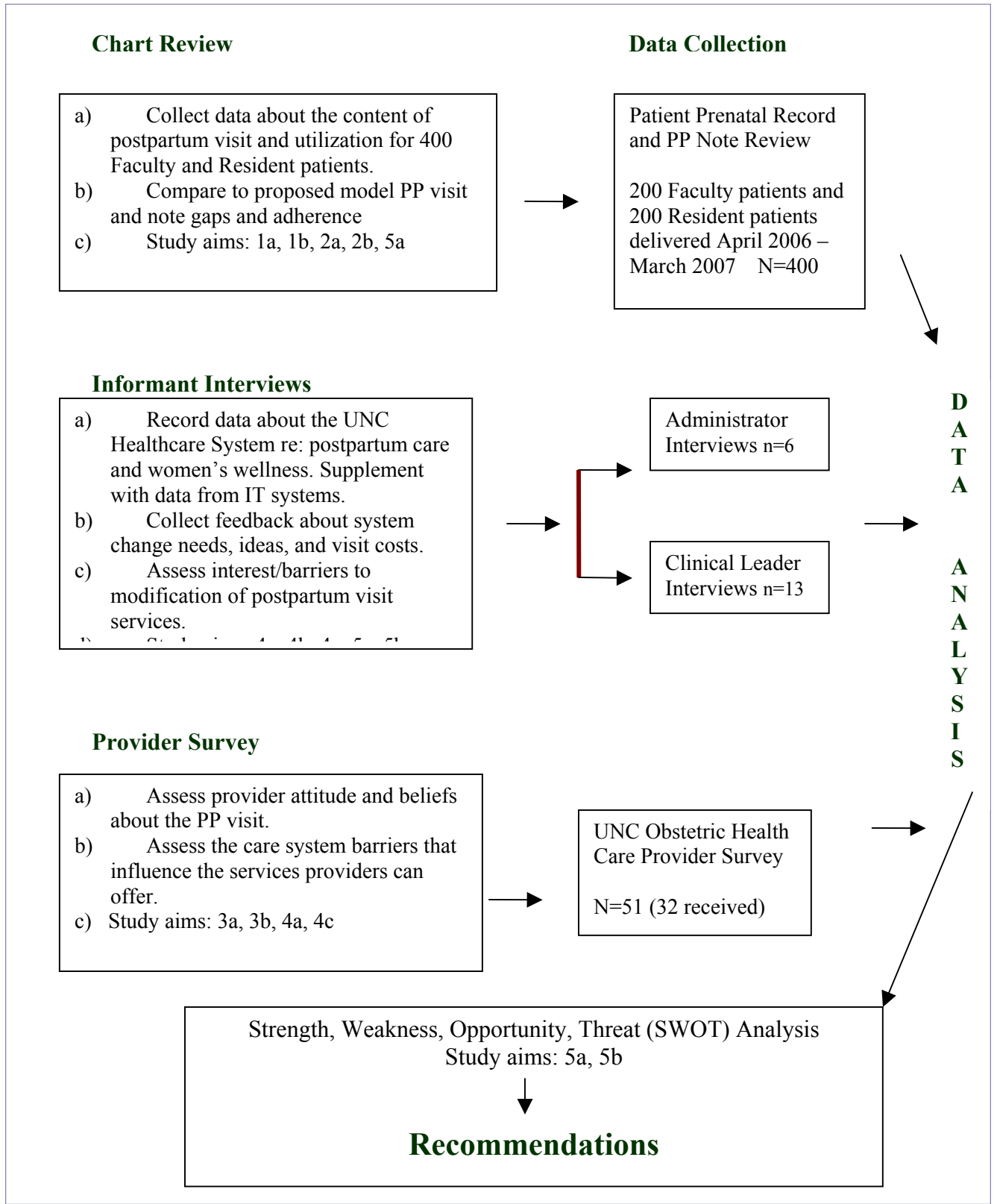
- BMI: weight counseling/nutrition/exercise
- Poor pregnancy outcomes: congenital anomalies, preterm birth, low birth weight, fetal/infant demise
- Family Planning: contraceptive choices matched to patient needs/desires
- Substance Use
- Hypertension: prior to pregnancy / pregnancy induced
- Diabetes: prior to pregnancy / pregnancy induced
- Depression
- Anemia
- Partner Violence
- Multivitamins

A codebook was developed to insure consistency in the abstraction process. The codebook included clinical guidelines for the interpretation of information such as BMI,

blood pressure, and certain laboratory results. Merry-K Moos, RN, FNP, MPH, Professor, Maternal Fetal Medicine Division, and Suzanne Shores, MSN, CNM reviewed the codebook for clinical accuracy. Throughout the abstraction process, Suzanne Shores was available to answer questions of clinical significance.

An access database was created to accommodate data entry. WebCIS records were reviewed and information entered directly into the database using a split computer screen. The data are housed on a password protected secure server that is backed up daily. A recent graduate from the Schools of Social Work and Public Health was employed to assist in the data abstraction process. She worked along side the Principal Investigator to review charts. When either abstractor encountered a record or information that did not seem to fit the codebook, the item was reviewed and discussed until consensus was reached. Suzanne Shores served as a clinical consultant for some of the cases to assist with a valid resolution. Notes were recorded throughout the process to document the reasons why specific decisions were made. Reviewers checked random records from the other to insure consistency in coding. Approximately 205 charts were reviewed twice to complete information regarding diabetes and anemia. While time consuming, this also provided another opportunity for reviewers to check for consistency and record completeness. At the close of the data entry, each record was given a numeric code and the link to the medical record destroyed per IRB requirements.

Figure 4: Complete Study Overview with Results



The data were uploaded into SPSS for analysis. The data were analyzed using frequencies, percentages, mean, cross tabulations, and chi square tests. Variables were created to account for the total number of core services a woman received at her postpartum visit. This was necessary in order to provide a marker for content of care and then allow a comparison of the content of care by various maternal characteristics. Eleven services considered important to the postpartum visit were included in those variables. These are described in greater detail in Chapter 4. Resident and faculty delivery of the services and other data relating to the content of postpartum care were compared to assess any differences or similarities in care. Utilization and content of care variables were studied based on patient characteristic to study any differences and similarities as well.

There were several challenges to the methods in the chart review. The first was the potential impact of resident rotation and the content of the postpartum visit. It is expected that newer residents may be less likely to understand the health care system and be familiar with the appropriate content of postpartum visits. To address this issue, the chart samples were drawn from the entire academic year to account for this potential variation in practice. Inter-rater reliability for the chart review was another important area of consideration. Abstractors reviewed the same charts and then compared the way in which each had recorded the contents of care to determine consistency. Areas of differing opinion were discussed and a decision made about how to code these items. The abstractors spoke frequently and considered coding for unusual information or data together.

Key Informant Interviews

The next data collection component of this project focused on the health systems segment of the conceptual model in Figure 5. The interviews primarily sought to collect

information to research questions in Aim 4. This component of the study gathered information about services offered to new mothers, such as breastfeeding support, education, care coordination, and psychiatric and genetic counseling. Additionally, the data collected included system wide issues such as billing, scheduling, marketing, facilities, information technology, and patient scheduling/reminders. Key informants were able to provide important information that offered some insight into the way services were offered, both the areas working well and areas for improvement. The participants in this phase of the research also offered their ideas for potential system improvements, including insight as to current efforts to improve care. Information from individuals knowledgeable about the UNC Healthcare System and the Obstetrical Program was essential to this research.

Data were collected through 19 individual interviews with two groups of stakeholders: health care administrators and clinic leadership. Only individuals who were employees of the UNC School of Medicine or UNC Healthcare were included in the study. A total of 6 administrators and 13 clinical leaders were interviewed. The interviews took place in January and February 2008. The key informants were selected based on their status as stakeholders in prenatal/postpartum care and as UNC staff with some responsibilities that interface with the postpartum visit. All of the staff had been employed at UNC for a least one year, with most having been in their position for over four years. All but one of the individuals who received a request for an interview participated in the study. This individual did not respond to the IRB approved email inquiries. Per IRB protocol the person was not contacted by telephone.

The key informants were contacted via email to request their participation. Appointments for interviews were also made and confirmed online. The majority of the

interviews took part in the informant's office with the remaining three taking place in clinic consultation rooms. Participants were given an overview of the purpose of the study prior to signing their consent. The interviews were semi-structured and related to each individual's role and experience at UNC. The full list of questions is available in Appendix B. While there was some overlap in questions, most were tailored to the expertise of the participant. The length of the interviews varied from 15 minutes to 45 minutes with the average interview taking approximately 30 minutes. The general tone for all of the interviews was conversational. Participants were engaged in the interview with none responding to calls or pages during the timeframe of the interview. Immediately after each interview, notes were reviewed and transcribed into a Word document. Participants were given a code so their specific comments could not be linked to the data. Participants were sent a thank you note along with a \$5 gift card to the hospital coffee shop. All expressed interest in receiving a final copy of the paper.

Due to the fact that the same person conducted all the interviews and the interviews were not taped, a copy of the interview was sent to each informant. This allowed them the opportunity to review the transcription for accuracy if they so chose. This step was done to improve the reliability of the data. The data were formatted for import into qualitative research software per Lewins and Silver.(142) They were then uploaded into an Atlas.ti program. A variety of themes were discerned working with this software. These included information about specific services available to new mothers at UNC, system challenges, and ideas for improving services.

Some challenges were inherent to the methods for this part of the study. The first was potential response bias. Both the administrators and clinical leaders knew the interviewer,

working with her for the same employer. This created the possibility that the respondents might modify their answers and be unwilling to openly share their opinions about the institution. This issue was addressed in two ways. First, the interviews were not recorded. Secondly, the researcher clearly stated the purpose of the research and how the data would be used.

Researcher bias was another potential challenge in that the researcher might “hear” certain answers or opinions based on pre-existing ideas or goals. To address this concern, it was important for the interviewer to maintain personal awareness of this possibility for bias. The data was coded and analyzed using the Atlas.ti program. This opened up the possibility that another researcher could review this analysis and code the data as well. Finally, the interview transcripts were shared with informants to insure that the information recorded truly reflected what they had said.

Provider Survey

A survey of UNC obstetrical care providers was conducted to answer the research questions in Aim 3. These questions focus on providers’ attitudes toward the postpartum visit, health care system barriers that influence the providers’ ability to offer comprehensive care to new mothers, and how well providers think they are able to meet new mothers’ needs. The participants invited to complete the survey included a variety of health care providers at UNC who provided some component of prenatal and/or postpartum care. The number of providers invited to participate and their training are listed in Table 2 below. Of note, the staffing of the OB/GYN services is dynamic and the numbers are an estimate at one point in time only. The racial and ethnic diversity of the providers at UNC is very limited, with the vast majority of the providers being Caucasian. As such, data may not be analyzed by the

race and ethnicity of the provider in order to preserve confidentiality. While the number of residents is such that they may be stratified by gender, other groups listed below either do not have any males or have only one or two. Showing information by gender would not be acceptable due to breach of confidentiality.

The provider survey was conducted electronically using Survey Monkey©. A copy of the survey is available in Appendix C. The survey was designed to take only 5 minutes with 2 questions about the provider's clinical background/training followed by 8 closed questions and 1 that was open-ended. All of the providers except for residents were invited to participate in the survey via an email sent directly by Survey Monkey©. A list of email addresses for obstetric faculty was obtained from Laura Baron, OB/GYN Personnel Manager. Ms. Baron shared the list with the Division Managers for Maternal Fetal Medicine (MFM), Women's Primary Health and Midwifery for review. After the initial email was sent, two additional requests were emailed to providers who had not completed the survey. The initial invitation resulted in the greatest number of respondents – most of which were given between 5am and 7am during the first two days. An announcement was made at Grand Rounds two days after the survey was launched to alert providers to the survey and request participation.

The residents received an invitation to participate in the survey with the link to the survey via their listserv. The resident program coordinator was responsible for sending out the message and link. This was done per protocol set by the resident program. The survey was sent only after proof of IRB approval was provided. This group also received an initial request along with two additional reminder emails with the survey link. All members of this group received reminders regardless as to whether or not they had completed the survey. The

Chief Resident also encouraged his colleagues to complete the survey. While the Survey Monkey© provided the opportunity to review the data as linked to the email of the respondent, this option was not selected. All data were reviewed in aggregate form.

The electronic survey tool conveniently tallied all the data results, including the open comments. This eliminated the possibility of data entry errors. Further, the open-ended responses were typed in by respondents, which eliminated problems in reading handwriting. The tool automatically saves and backs up the data and is password protected. Incentives were not offered due to the short length of the survey and administrative challenges presented by the UNC billing department in the dispensation of the cards without signatures. This does not seem to have adversely impacted the response rate for the survey.

The greatest challenge to this component of the study was the potential poor response rate. To address this issue, the survey was pilot tested to insure that it was a reasonable length and could be completed with relative ease. Key leadership such as from the Chief Resident and Maternal Fetal Medicine Division Director was enlisted to assure adequate participation in the research study. Finally, targeted follow up reminders were sent to respondents to encourage participation. Retired faculty in Maternal Fetal Medicine and Women's Primary Care were excluded from the survey as were non-UNC affiliated obstetrical care providers.

Table 2: UNC Faculty & Resident Clinic Health Care Providers 2007

Provider Training	Number
Maternal Fetal Medicine Specialists & Fellows	9
Women's Primary Care Obstetricians & Fellows	8
Certified Nurse Midwives	6
Nurse Practitioners	1
OB/GYN Residents	24
Total Number	48

The actual number of participants included in the survey population ended up being 51, based on the number of email addresses sent for study inclusion. The department included a research faculty member, the lead clinic nurse, and the director of the genetic counselors on the list. Because the genetic counselors do participate in some postpartum services, particularly for mothers who had poor birth outcomes, it was decided to include this survey in the pool for analysis. The lead clinic nurse clearly plays a role in the postpartum visit so her survey was included. The research faculty member seems to have opted out of the survey.

Table 3 below offers a brief summary of the study inclusion and exclusion criteria for all three components of this study. The criteria were described in greater detail within the description of each method.

Table 3: Summary of Study Inclusion and Exclusion Criteria

	Inclusion	Exclusion
Patients	Received Prenatal Services through faculty or resident Clinic and delivered a baby between April 2006 and March 2007	<ul style="list-style-type: none"> • Maternal Transports • Patients who delivered at UNC but didn't receive prenatal care at UNC • Patients who transferred in to prenatal care
Providers	<ul style="list-style-type: none"> • Provide prenatal and postpartum care through the faculty or resident Clinic • MFMs, MFM Fellows, CNMs, NPs, OB/GYN Generalists, Residents 	Retired MFMs and Obstetricians Non-UNC Affiliated Providers
Key Informants	Leaders who have responsibilities that relate to the postpartum visit. Informants refer patients for postpartum care, provide medical or ancillary services to PP patients, monitor billing/expenditures, or provide general administrative oversight and support to the UNC Obstetric Program.	Non UNC employees

Recommendations

The fourth and principle component of the study is the development of recommendations to enhance the UNC Obstetric Program's ability to provide postpartum

visits that offer a transition from pregnancy to well-woman care. To answer the research question regarding the gaps to be addressed, the data from the three study components were reviewed. These results were then compared with the findings of the literature review for similarities, differences, and ideas.

To further inform this process, an analysis using the Strengths, Weakness, Opportunity, Threat (SWOT) method was conducted for each recommendation. Developed by Doshier, Benepe, Humphrey, Stewart, and Lie in 1960, this tool encourages proactive thinking and is used for decision-making in business and among organizations. The analysis focuses on one particular change or idea. This model forces analysis of internal strengths and weaknesses as well as external opportunities and threats. The SWOT analysis should include a careful review of all available options and resources as well as potential barriers. (143, 144) For this study, the data results were considered and included in the SWOT analysis for each recommendation where appropriate. Some points of consideration to be included in the analysis focus on areas which include what the organization may do better than others, its unique resources and skills, as well as where improvement can be sought, areas to avoid, new market trends, and changes in social patterns, technology and event current events. Ease of implementation, cost of implementation, and efficacy were also considered in the SWOT analysis. (145)

Prioritizing each recommendation was the next step in the process. A search for an appropriate method to do this found the Failure Mode and Effects Analysis (FMEA) model to be one potential mechanism for prioritization. FMEA is a procedure for analysis of potential failure within a system by looking at the severity of the results of the failure, the frequency of occurrence of the failure, and how likely that failure is to be detected. This model is widely

used in the manufacturing industry but has of late been adapted to use in service industries. The Joint Commission on Accreditation for Healthcare Organizations (JCAHO) now requires each hospital to complete at least one FMEA each year. In a hospital setting a severity ranking table is an extreme effect such as a patient death and/or permanent injury that could result from inappropriate, incorrect, or neglected care. A 10 in the FMEA probability ranking indicates that the incident may occur as frequently as one out of two times. Finally, a 10 in the likelihood ranking suggests that a process/system problem will almost certainly go undetected.(146) This helps determine areas where severe injury is likely to occur undetected. A diverse team is generally recruited to conduct a FMEA analysis. This team accesses a wide variety of information to guide the ranking process. In this way, the process of pulling the data and reflecting upon it serves also to move a group of change agents forward for implementation. As the hospital completes FMEA analysis for upwards of 40 indicators and processes, the ranking then allows it to prioritize where it should focus in making improvements in care.

Since the FMEA is used widely within UNC Health care, this model was applied to the postpartum visit. Essentially, for the majority of healthy patients, the lack of a postpartum visit or the receipt of only a cursory visit has the potential to only cause minor patient injury at that moment in time. The visit is important for avoiding moderate patient injury for women who have unresolved chronic disease issues or birth related traumas. Screening for postpartum depression at the visit does have the potential to prevent major patient injury for women who have severe depression and suicidal tendencies. This suggests that for patients with certain conditions, the visit may be more important than for patients without those conditions. While the postpartum visit is a clinical intervention, it is also an important

preventive visit. The FMEA tool is more applicable to immediate hospital-based concerns rather than the potential long-term impact of untreated depression and inadequate contraceptive counseling. Ultimately, missing a postpartum visit or receiving incomplete services has the same severity ranking across the board for the postpartum visit recommendations. While the FMEA can offer a great deal of complex data in some settings, applying only the FMEA to the postpartum visit did not yield the differentiation needed for prioritization. While severity and risk are very important indicators, for this study in an out-patient setting, FMEA alone didn't offer the richness and depth needed for prioritization among recommendations.

Methods were also sought to guide the recommendation implementation process. Prior to starting the change process, Langley and colleagues suggest that leadership and teams consider three questions: a) what are we trying to accomplish? b) how will we know that a change is an improvement? and c) what changes can we make that will result in improvement? They strongly suggest that these questions be posed both in the planning, trial, and implementation stages of improvement. They encourage the use of the Plan, Do, Study, and Act model for improvement. This model requires several cycles as part of the change process, with each stage requiring data and input. With the introduction of a large, system-wide change, these authors would suggest that these questions be posed at every step of the process and that the implementation take place in stages with careful attention to the improvement model at each stage. They also suggest that in considering improvement, it is important to think creatively. This includes challenging the current boundaries, rearranging the order of the steps, looking for ways to smooth the flow of activities, evaluating the purpose, visualizing the idea, and removing the current way of doing things as an option.

Finally, they suggest that it is important to let people know why a change is needed and what is to be accomplished by that change. The data from this research can be used to facilitate a dialogue about why change is required at UNC to improve the postpartum visit. It is necessary to continue to inform everyone who will be affected by the change of the progress being made through the development and testing stages. They also suggest that it is important to provide specific information as to how the change will affect people and to get their input on how to make it successful.(147)

Confidentiality

A single Institutional Review Board application was submitted to the UNC School of Medicine for this multiphase study in August 2007. Each phase was approved sequentially as an expedited review, with the first phase also approved in August 2007. Signed consent was waived for chart reviews as names were not linked to the data and the medical record numbers were deleted once data entry was complete. Electronic charts were reviewed behind the hospital firewall on secure, password-protected computers and stored on an encoded password protected system. Key informants gave written, informed consent prior to the interview. Their results are presented in aggregate and the names of the individuals held as confidential. Informants were made aware of the small sample size. The notes recorded electronically did not have the name of the individual surveyed but did include their general position at the University. All health care provider respondents to the electronic survey were required to read a consent form and agree to participate before being able to proceed with the survey. The file is password protected and stored at the Survey Monkey site. Only the lead investigator had access to this file. Participant responses were unlinked from their email addresses for analysis.

CHAPTER FOUR

CHART REVIEW RESULTS

As discussed in Chapter Three, a total of 400 patient medical records were reviewed to collect information about the utilization of the postpartum visit at UNC as well as about the content of the care received. This section details the results of that chart review. It is important to note that missing data are a challenge to this study, particularly in responding to research questions in Aim 2 regarding the content of the postpartum visit. Of the sample size of 400, 70 (17.5%) of the patients did not receive a postpartum visit. Within the study population there were 24 additional patients (6%) who received a visit but for whom no postpartum note was dictated. Information is available about these patients based on their hospital discharge summary, laboratory results, and notes about other services received within the year after they gave birth at UNC. This data was included in the chart review and is important in assessing utilization. Unfortunately, without further information about their postpartum visit, the sample size for analysis on the content of care is reduced. Additionally, approximately half of the postpartum clinic notes were short and contained only limited information. This study, however, is based on the premise that if the information isn't recorded then the services were not provided. This missing information is a study finding at the same time that it presents a study challenge.

Patient Characteristics

Table 4 below provides an overview of how the study sample compares to the total population seen in the faculty and resident clinics over the course of a year. The sample was very similar to the annual patient populations for resident and faculty clinics. There were only a few characteristic differences between the sample population and the clinic patient population. There was a higher percent of married women in the study than are normally seen in the clinics. There was a slightly lower percentage of congenital anomalies and preterm birth than might have been expected. On all other measures, the sample selection appears to mirror the clinic population.

Table 4: Comparison of Study Sample Population to Total Population

Patient Characteristic	All Mothers Who Deliver at UNC	Study Mothers	Faculty Clinic	Faculty SAMPLE	Residents Clinic	Residents SAMPLE
Caucasian	1398 (40%)	214 (53.5%)	754 (77%)	160 (78%)	227 (35%)	54 (28%)
African American	564 (16%)	91 (23%)	100 (10%)	20 (10%)	177 (27%)	70 (37%)
Hispanic	1366 (40%)	72 (18%)	41 (4%)	9 (4%)	229 (35%)	63 (33%)
Asian/Indian Asian / Other	105/16/33 (4%)	21 (5.5%)	62/10/16 (9%)	15 (7%)	9 / 2 / 9 (3%)	6 (3%)
Married Mothers	1993 (57%)	255 (64%)	865 (88%)	181 (88%)	274 (42%)	73 (38%)
Single Mothers	1489 (43%)	144 (36%)	118 (12%)	24 (12%)	364 (56%)	120 (62%)
Preterm Birth	516 (15%)	68 (17%)	111 (11%)	30 (7%)	118 (18%)	38 (9%)
Fetal Anomaly	166 (5%)	4 (1%)	29 (3%)	2 (1%)	63 (9%)	2 (1%)
Fetal/infant Demise	87 (2.5%)	12 (3%)	16 (1.5%)	6 (1.5%)	25 (3.8%)	6 (1.5%)
Total Infants Delivered	3,482	400	983	200	651	200

Aim 1: Postpartum Visit Utilization

Table 5 describes the utilization of postpartum care based on a variety of patient characteristics. Pearson Chi Square tests suggested that payer, age, parity and marital status in this study were significant for postpartum utilization. Following convention, the cut point for significance utilized by this study is 0.05. The data reflect trends described below seen in other postpartum utilization studies that mothers who have Medicaid or are Uninsured, are younger, and/or with multiple children are the least likely to receive a postpartum visit. In this sample population, the birth of a healthy or unhealthy infant did not influence a mother's attendance at her postpartum visit. Mode of delivery did not impact postpartum utilization.

Table 5: Patient Characteristics and Postpartum Visit Utilization

Additional Patient Characteristics	Postpartum Visit YES	Postpartum Visit NO	X² Test
Payer Source			P=0.000
Medicaid / Uninsured	106 (73%)	39 (27%)	
Insured	172 (93%)	13 (7%)	
<i>Note: 122 records (31%) had missing data for insurance</i>			
Race/Ethnicity			P=0.032
Caucasian	183 (86%)	31 (14%)	
African American, Asian, Native American, Other	147 (79%)	39 (21%)	
Hispanic	58 (81%)	14 (19%)	
Age			P=0.007
16-18	7 (64%)	4 (36%)	
19-21	21 (64%)	12 (36%)	
22-34	236 (85%)	42 (15%)	
35-45	66 (85%)	12 (15%)	
Parity*			P=0.001
0 no other children (primigravida)	149 (89%)	18 (11%)	
1 additional child	102 (84%)	20 (16%)	

2 additional children	52 (74%)	18 (26%)	
3-7 additional children	27 (66%)	14 (34%)	
Distance from UNC			P=0.244
Same county (Orange)	103 (84%)	20 (16%)	
Bordering counties	137 (85%)	24 (15%)	
Two or more counties away	90 (78%)	26 (22%)	
Cesarean Section			P=0.989
Yes	137 (82.5%)	29 (17.5%)	
No	193 (82.5%)	41 (17.5%)	
Birth Outcome			P=0.805
Healthy Infant	259 (83%)	54 (17%)	
Infant with Recognized Health Problems**	71 (82%)	16 (18%)	
Marital Status			P=0.005
Married	223 (88%)	32 (12%)	
Unmarried	107 (74%)	38 (26%)	
Delivery Complication			P=0.074
Yes	198 (85%)	34 (15%)	
No	131 (78%)	36 (22%)	

** Parity of 0 refers to mothers for whom the birth in this study was their first. Parity of one or more only refers to other live born children.*

*** Includes infants born preterm, with anomalies, and fetal/infant deaths*

Overall, 82.5% percent (n=330) of patients in the study population received a postpartum visit. Within this population, 70% of mothers with Medicaid received a visit compared to 94% of mothers with private coverage. Both of these percentages were above those reported by the 2007 HEDIS report where only 59.1% of Medicaid patients and 79.9% of privately insured patients received a postpartum visit.(123) Of the study population, 75% of mothers who received their care from residents received a postpartum visit as compared to 90% for those who were cared for by faculty. This difference may be partially explained by

the fact that the many of the residents' patients had Medicaid or were Uninsured – a population documented to have lower rates of postpartum visit utilization. Race and ethnicity was also significant with a p value of 0.032.

The labor and delivery discharge summaries include a section about complications. For this study these were categorized as perineal lacerations, hemorrhage, infant problems, other maternal complications, and combinations of two or more issues. Overall, 57% of the sample population had some kind of complication described in their summary. Women who had complications at delivery were more likely than other women to have a postpartum visit with this characteristic approaching statistical significance with a p value of 0.074. Of note, the percentage of cesarean sections for this sample of 42% is higher than the average cesarean section percentage at UNC, which is approximately 28%.

Some of the findings mirror Kogan et al's research, which also found that younger women and women with higher parity were less likely to get a postpartum visit. However, Kogan et al's work also found that mothers with poor birth outcomes were less likely to receive a postpartum visit.(87) This particular indicator was not reflected in this study's results. York's work also found that women with higher parity were less likely to receive a visit.(91) Lu and Prentice's research reflected this study's findings that women who were African American, younger, single and had Medicaid were less likely to receive a postpartum visit than other women.(7)

Aim 2: Services Women Receive at the Postpartum Visit

Analysis by Individual Service

Based on the literature and postpartum visit content described earlier in this dissertation, the following items were considered to be core postpartum visit services: family

planning counseling, vitamin recommendation, assessing substance use, assessing maternal and infant bonding, inquiring about return to sexual intimacy, screening for family violence, recommendation for future well-woman visits, breast examinations, Pap Smear test (performed or date recommended for next test), postpartum weight recorded/counseling provided, and screening for postpartum depression. Table 6 presents an overview of each core service and the frequency with which it was provided.

Table 6: Core Postpartum Services Provided to Women Who Received a Postpartum Visit

Core Service	Yes	No	Missing ¹
Family Planning Counseling Provided	288 (72%)	25 (6%)	87 ² (22%)
Postpartum Depression Screening	262 (66%)	41 (10%)	97 (24%)
Pap Smear Provided or Recommended	222 (56%)	81 (20%)	97 (24%)
Recommendation about Next Well-Woman Visit	191 (48%)	112 (28%)	97 (24%)
Weight Recorded	199 (50%)	201 (50%)	see note ³
Weight Discussed	15 (4%)	288 (72%)	97 (24%)
Return to Sexual Intimacy	145 (36%)	160 (40%)	97 (24%)
Breast Examination	112 (28%)	191 (48%)	97 (24%)
Vitamin Recommendation	62 (16%)	241 (60%)	97 (24%)
Asked about Substance Use	56 (14%)	247 (62%)	97 (24%)
Asked about Maternal / Infant Bonding	18 (4%)	275 (69%)	107 ⁴ (27%)
Asked about Family Violence	9 (2%)	294 (74%)	97 (24%)

Notes:

¹The 97 missing cases refers to the 70 women who did not have a postpartum visit, 24 women who had a visit and no note, and 3 additional women who had a visit and a note but the note was so sparse as to not contain information about any services rendered.

²Some of the patients who did not have a postpartum visit or note, did have a note on their discharge summary that they had received a bilateral tubal ligation at delivery OR that their partner had a vasectomy. As such, they would not have required family planning counseling at their postpartum visit

³The entire WebCIS record was reviewed for any recording of weight – regardless of the woman's postpartum visit receipt. Of the 400 records reviewed, half did not have information about the woman's weight.

⁴Mothers whose babies died or were in critical condition in the intensive care nursery would not have been appropriate to ask about maternal/infant bonding

The service most likely to be provided to new mothers was family planning counseling, with 72% of the women having some notation in their chart that they had received family planning information. Pregnancy spacing is an important component of interconception health, particularly since some women may have already returned to fertility by this visit. Although a related topic, only 36% of women had any documentation in their chart noting that providers had asked them if they had resumed sexual intimacy. Providers were more likely to ask first time mothers about their return to sexual intimacy than they were to ask mothers who had one or more children. While the numbers are small, it is interesting to note that mothers with 3 or more children were less often asked about their return to sexual intimacy and the resulting risk for becoming pregnant again. This was significant with a Pearson Chi Square of 0.000.

Table 7: Parity and Family Planning Discussions

Parity	Asked about Return to Sexual Intimacy	Not Asked about Return to Sexual Intimacy
0 (first time mothers)	82 (59%)	56 (41%)
1	41 (45%)	50 (55%)
2	15 (30%)	34 (70%)
3-7	7 (27%)	19 (73%)

The next most frequently provided service was screening for postpartum depression. The postpartum depression variable used in Table 7 above reflects a generous categorization of any type of inquiry about depression or mood issues postpartum. This variable includes the providers who specifically used the Edinburgh as well as providers who noted that they asked their patient about depression or observed her for it during the visit. In keeping with UNC clinic policy, all new mothers are to be screened for postpartum depression using the Edinburgh Screening Instrument. The specific use of the Edinburgh Screening Instrument

was documented, however, in only 37% (148) of the records. Among this group, there were 11 notes where the provider stated that he/she reviewed the Edinburgh score but then did not record the score (3%). Of those who used the instrument and recorded a score for their patients (138), 19% of the mothers scored borderline to high on the scale.

Discussion about Pap Smear screening and well-woman visits was noted for about half of the women (56% and 48% respectively). While the evidence is not strong that it be required or appropriate to be done at the 6-8 week postpartum visit, Pap Smear tests are often a standard part of postpartum care. At UNC within this sample population, 15% of women (61) received a Pap Smear at their postpartum visit. The postpartum note indicated that such a test was not needed for 40% (161) of the women. These data suggest that the clinic makes an effort to avoid unnecessary Pap Smear tests at this visit. However, 20% of the women (81) who received a visit and had a note did not receive a Pap Smear and their discharge note made no mention of the need for this test in the future. An additional 24% of the women (97) did not receive a postpartum visit or didn't have a note in their chart. That these women also did not receive this test or information about when their next Pap Smear test should be done is likely. While just over half of the women received screening or counseling regarding the Pap Smear test, almost half of the women did not. Recommendations for the timing of future well-woman visits varied, with 38% of the women counseled to return for a well-woman visit in less than a year. Some providers suggested that women return in 3 months for their Pap Smear test, calculating that most had received a Pap Smear at the beginning of their pregnancy. This timing may have been intentional to allow the women an opportunity to talk with their provider about family planning and other health concerns at about 4 months postpartum. Visits for well-woman care / annual Pap Smear tests are usually covered by

private insurance carriers. This may be a strategy some providers use to adapt the current system to the needs of new mothers.

The issue of weight was divided into two separate variables. The first was whether or not the woman's postpartum weight (or any weight at all for that matter) was recorded on the available records. During prenatal care a mother's weight is carefully monitored at each health care visit. A mother's postpartum weight is also important but it seems that it is less likely to be recorded in-patient discharge notes at UNC. Within the patient sample, 50% of mothers did not have a weight recorded anywhere in their WebCIS chart or hospital discharge summary. Of the mothers who had BMIs that were recorded or could be calculated, 30% (119) were clinically obese (BMI 30 +) and 9% were overweight (BMI 25-29.9). Three mothers were underweight at their postpartum visit (BMI 18.5 or less). The second variable was whether women received any advice or information from the provider about postpartum weight loss and nutrition. Only 4% of all the women who had a postpartum visit received any kind of counsel about weight, exercise and/or nutrition at their visit. Further, of the 86 obese and/or overweight women who received a postpartum visit, only 7% received any kind of nutrition or weight management counseling. This is clearly a problem as obesity and overweight presents risks to women and infants during pregnancy and beyond.

Services the least likely to be provided were breast examinations and counsel about vitamins. Even though the literature demonstrates that women have depleted stores of folic acid postpartum and that folate is an important part of interconception health, only 16% of mothers were encouraged to continue to take a daily multivitamin. Screenings were done the most infrequently for maternal and infant bonding, family violence, and substance use. Of these topics, it is somewhat surprising that the issue of maternal and infant bonding was not

addressed more frequently. This may be a notation issue in that providers didn't take the time to note this discussion. It might also be that some providers might observe the interactions between the mother and baby and only comment if problems are noted. However, the notes in the charts did not provide information specifically as to whether the baby was with the mother at the visit or not. At a time when many mothers may be returning to work, dealing with depression, having breastfeeding challenges, and other coping issues, it is noteworthy that there isn't more information in the notes about this important issue.

Data about-patient substance use were difficult to find in the records, including information about tobacco use. The entire WebCIS record was scanned with an eye for any reference of substance abuse and violence. It was thought that any information about these issues would be important in determining whether appropriate follow up services were received at the postpartum visit. Based on all available information (not just the postpartum discharge note), 5% of the mothers in the sample used alcohol, 2% smoked marijuana, 9% used tobacco products, 2% used more than one substance, and 42% did not report using any substance. For 40% of the records it could not be determined if substances had been used or not as there was no reference to this information anywhere in their WebCIS record.

Information about family violence was even harder to locate. Specific information in any of the charts about prevalence of domestic violence was not readily apparent. The information in WebCIS did not seem to be a good source of information as far as documenting these issues for mothers. With so few providers asking mothers about these concerns on top of poor documentation, it seems that some mothers might be at risk for these problems and have those risks continue unaddressed.

Analysis by Number of Services Provided

An analysis was done to determine how many core services women received at each visit. This determination was important because simply receiving a health care visit does not guarantee that appropriate services were provided. Data were also reviewed to determine if there were specific patient characteristics that were associated with receiving more or fewer services. An index variable was created with eleven core services listed above. This variable did not include the 70 women who did not receive a postpartum visit; these women were considered as “missing” in the data. For the purpose of the data analysis, the “missing” were classified as “0”. As such, the chart below reflects only the services that women who were billed for a postpartum visit received. Of note, for the purpose of this analysis, “credit” for services relating to weight included having a weight recorded in the chart and/or counsel about weight. If only the discussion about nutrition was included, the number of services received would decrease by one for most women.

Among all the women who had a postpartum visit and a postpartum note, none of the women received all 11 services nor did anyone received 10 services. Only 6 women received 9 services (1.5%). On the other end of the spectrum, 51 (13%) did not receive any of the core services. The mean number of services received per visit was 3.92. For the purpose of data analysis based on patient characteristic, the services were grouped into 1-2 services, 3-4 services, 5-6 services, 7-8 services, and 9 or more services to facilitate data analysis. Sixty women (15%) received between 1 and 2 services, 95 women (24%) received between 3 and 4 services, 150 women received between 5 and 6 services (37%), and 38 women (9.5%) received between 7 and 8 services. Table 8 describes the number of core services received based on patient characteristics.

Table 8: Services Received Based on Patient Characteristics

Patient Characteristics	0 services	1-2 services	3-4 services	5-6 services	7-8 services	9+ services	X ²
Payer Source							0.037
Medicaid / Uninsured	18 (12%)	30 (21%)	32 (22%)	45 (31%)	16 (11%)	4 (3%)	
Insured	21 (11%)	19 (10%)	44 (24%)	83 (45%)	16 (9%)	2 (1%)	
Race							0.003
Caucasian	41 (13%)	41 (13%)	80 (26%)	116 (38%)	30 (9.7%)	1 (0.3%)	
African American	10 (11%)	19 (21%)	15 (17%)	34 (37%)	8 (9%)	5 (5%)	
Ethnicity							0.054
Hispanic	12 (17%)	6 (8%)	23 (32%)	21 (29%)	10 (14%)	0 (0%)	
Non Hispanic	39 (12%)	54 (16%)	72 (22%)	129 (39%)	28 (9%)	6 (2%)	
Age							0.005
16-18	3 (27.3%)	1 (9.1%)	3 (27.3%)	1 (9.1%)	2 (18.2%)	1 (9.1%)	
19-21	10 (30.3%)	5 (15.2%)	3 (9.1%)	9 (27.3%)	4 (12.1%)	2 (6.1%)	
22-34	30 (11%)	40 (14%)	74 (27%)	105 (38%)	26 (9%)	3 (1%)	
35-45	8 (10%)	14 (18%)	15 (19%)	35 (45%)	6 (8%)	0	
Parity							0.115
0 (primigravida)	17 (10%)	16 (10%)	39 (23%)	71 (42%)	18 (11%)	6 (4%)	
1 child	19 (16%)	20 (16%)	27 (22%)	45 (37%)	11 (9%)	0	
2 children	8 (11.5%)	15 (21.5%)	18 (26%)	24 (34%)	5 (7%)	0	
3-7 children	7 (17%)	9 (22%)	11 (27%)	10 (24%)	4 (10%)	0	
Distance from UNC							0.811
Same county (Orange)	14 (11.5%)	17 (14%)	32 (26%)	46 (37.5%)	10 (8%)	4 (3%)	
Bordering counties	21 (13%)	24 (15%)	35 (22%)	63 (39%)	16 (10%)	2 (1%)	
Two or more counties away	16 (14%)	19 (16.4%)	28 (24%)	41 (35.3%)	12 (10.3%)	0	
C-Section							0.939
Yes	18 (11%)	26 (16%)	39 (23%)	63 (38%)	17 (10%)	3 (2%)	
No	33 (14%)	34 (15%)	56 (24%)	87 (37%)	21 (9%)	3 (1%)	
Birth Outcome							0.431
Healthy Infant	42 (13%)	48 (15%)	68 (22%)	119 (38%)	30 (10%)	6 (2%)	
Infant with Recognized Health Problems	9 (10%)	12 (14%)	27 (31%)	31 (36%)	8 (9%)	0	
Marital Status							0.018

Married	26 (10.3%)	34 (13%)	63 (25%)	110 (43%)	21 (8.3%)	1 (.4%)	
Unmarried	25 (18%)	26 (17%)	32 (21%)	40 (29%)	17 (12%)	5 (3%)	
Complication							0.359
Yes	26 (11%)	29 (13%)	59 (25%)	93 (40%)	21 (9%)	4 (2%)	
No	25 (15%)	31 (19%)	36 (22%)	56 (33%)	17 (10%)	2 (1%)	
Total	51 (13%)	60 (15%)	95 (24%)	150 (37%)	38 (9.5%)	6 (1.5%)	

The mean number of services received at each visit was reviewed for several key characteristics in the table of above. Caucasian mothers received a mean of 3.87 services at the postpartum visit as compared to 4.09 for African American mothers, and 3.88 for Hispanic mothers. Mothers who had private insurance received 4.16 services as compared to 3.84 for mothers who had Medicaid or were uninsured.

Similar to utilization patterns, certain groups of women within the sample set were less likely to receive services than others. Women who had Medicaid or are uninsured, were young, and single received fewer services than other women. In the service bundle dataset, race and ethnicity were factors in the number of services women received at their visit. Mothers who are African American are likely to receive more services than mothers who are Caucasian or Hispanic. While receiving a postpartum visit is important, the care provided to women at this visit is equally important. Based on the overall limited information recorded in the postpartum visit notes, it appears that the number of needs and issues addressed at the visit do vary by population characteristic. What was not clear was the amount of time a provider spent on the services he or she did cover. For example, if a patient had many questions and issues relating to family planning, the provider may not have had enough time to address other issues. The literacy level of the patient, the need for an interpreter, the amount of time the provider was allocated for the visit, and the amount of information available to the provider about the patient at the time of the visit are likely to influence the

number of services delivered. Still, it appears that there are subsets of patients within the OB program at UNC who receive fewer services than other women. Further, these particular groups of patients, including young, single, and minority women, tend to be at higher risk for health problems and behaviors that specifically require attention at this visit.

Maternal Requests for Information / Services

As part of the chart abstraction, data were collected regarding any notations about questions mothers asked providers. This information was gathered in order to be certain that providers were given “full credit” for all the care they offer at a visit. For example, if mothers’ questions were driving the services delivered that would suggest that the visits were patient-centered which is a positive finding, even if all of the core topics weren’t covered. As in all of the chart review data, the abstraction could only depend on the information the provider chose to note in his/her summary. Some may or may not have selected to note any specific maternal concerns but may have answered questions from mothers. Based on the written notes, the majority of mothers (86%) either did not ask any questions or the provider did not mention their questions. One provider noted that he/she had asked the mother if she had questions and the mother did not. In 17 notes (4%) providers remarked that they answered the mother’s questions but did not specify the nature of the question. Nine percent of the women asked very specific questions. These covered a range of topics with family planning (7 women), return to sexual activity (3), and back pain (3) being the most frequently ask. Some of the mothers had very specific questions about common postpartum health issues such as lactation, bleeding, urethral pain, hand numbness, incontinence, migraines, and skin pigmentation. Two mothers specifically asked for follow up testing for anemia, one asked for testing for thyroid issues, one asked that her glucose be rechecked, two asked for

their blood pressure to be evaluated, and three asked specifically about depression related symptoms. One mother asked about cerclage as an option for preventing a recurring preterm birth in the future and two mothers asked about weight loss and exercise. While most mothers' voices are not apparent in the medical record, the mothers who did speak up had very clear needs. Increasing the patient's ability to ask her provider for what she needs may be one way to impact the content and quality of postpartum care.

Aims 1 & 2: Postpartum Visit Utilization and Services Based on High-Risk

Characteristics

Information about high-risk mothers and conditions was gleaned from the existing data in the WebCIS system, primarily from the hospital discharge summary. In order to accurately identify all mothers with pre-existing chronic conditions and/or conditions developed during pregnancy, a review of the complete prenatal medical record is required. The hospital discharge summaries, however, are designed to capture key maternal complications and conditions. Further, since health care providers do not have the patient's prenatal record in hand for the postpartum visit at UNC, they must rely on their memory, patient memory, and the data in the discharge summary for the visit.

The number of women with poor birth outcomes in this study is not large. As such, the significance of these results would be better determined with a larger sample size. However, the information in this study is helpful in generating a basic understanding of the care provided. As an additional note, appropriate follow up care is determined based on the clinical encounter and the woman's specific needs. The information in this section isn't there to judge this encounter, rather to highlight women who appear to have required follow up care and the information noted about the care they received in their postpartum note. Table 9

below describes the number of women who had certain conditions or birth outcomes. It then denotes the number of women within each group who received a postpartum visit and then from among that group how many women received specific care for that condition. The data show that there are gaps in both postpartum visit utilization and follow up services for this set of high-risk women. This is of particular concern because these mothers are at high-risk for experiencing serious health problems and for having a recurring poor birth outcome.

Table 9: Receipt of Follow Up Referrals for Mothers with High-Risk Conditions

Risk Characteristic	Needed Follow Up	Received a Postpartum Visit	Received Follow Up Referral	Did Not Receive Follow Up Referral
Current Pregnancy: Stillbirth	7 (2%)	5 (71%)	4	1
Current Pregnancy: Neonatal Death	5 (1%)	3 (60%)	2	1
Current Pregnancy: Congenital Anomaly	4 (1%)	4 (100%)	0	4
Current Pregnancy PTB <27 wks	11 (3%)	9 (82%)	8 (90%)	1 (10%)
Current Pregnancy PTB 28-31 wks	8 (2%)	5 (63%)	1 (20%)	4 (80%)
Current Pregnancy 32-36 ⁶ wks	50 (13%)	42 (84%)	14 (33%)	28 (67%)
Anemia	186 (47%)	148 (80%)	24(16%)	124 (84%)
Diabetes	13 (3%)	10 (77%)	9 (90%)	1 (10%)
Gestational Diabetes Mellitus	38 (9%)	32 (84%)	12 (37%)	20 (63%)
Hypertension	40 (10%)	34 (85%)	12 (35%)	22 (65%)
Pregnancy Induced Hypertension	74 (19%)	58 (78%)	4 (7%)	54 (93%) ¹

¹*Of this group 35 had blood pressures within the normal range listed in their hospital discharge note. So in a sense they did not require a plan postpartum although some individuals might disagree.*

Follow Up Care for Preterm Birth, Congenital Anomalies, and Infant Demise

Poor birth outcomes are a marker for maternal health problems and risks for future pregnancies. They also may play a role in a woman's decisions about future pregnancies as

well as the outcome of those pregnancies. As described in the literature review in Chapter 2, mothers who have had a poor birth outcome have a host of postpartum needs. They are also at risk for health problems that impact their well-being as well as that of any future children they may have.

Merry-K Moos developed algorithms for providing care for mothers who experienced a poor birth outcome.(99) These algorithms clearly delineate a variety of interventions for these mothers. Some mothers require consultation with genetics, maternal fetal medicine, and reproductive endocrinology to discuss future risks to the mother and any other pregnancies she might have. Receiving a postpartum visit is another critical component of follow up care for these mothers. The chart review found that 13 mothers who had a preterm birth did not receive a postpartum visit. As such, these mothers did not receive follow up care. Secondly, data were recorded if mothers received specific counsel or referral about a condition as it related to their birth outcome. Among the 56 mothers of preterm infants who received a postpartum visit, while 23 (41%) received specific follow up regarding recurring preterm birth, over half of this group of mothers (59%) did not receive referrals for follow up at their visit. Of the women who had preterm infants and who had a postpartum visit, 4 women did not have any notation in their chart that family planning was discussed or offered. Eighty-seven percent of the mothers who had preterm infants and a postpartum visit were asked about postpartum depression (44 mothers). However, 9 mothers in this same cohort were not assessed for postpartum depression. Looking at the number of services provided, none of the mothers who had preterm infants received more than 5 services at her appointment. Twenty-three mothers received between 4 and 5 services, and 24 mothers received only 2 and 3 services.

Among the mothers who had infants born with congenital anomalies, all four women received a postpartum visit. All of these mothers were assessed for postpartum depression, and 75% received counseling about family planning. Only one mother was advised to continue to take a multivitamin with folic acid and none of the mothers received specific information or referrals relating to the impact of this birth outcome on future pregnancies.

Within the study cohort, 12 mothers experienced either a stillbirth or a neonatal death. Four of these mothers (33%) did not receive a postpartum visit. Of those who did receive a postpartum visit, 3 (38%) were not screened for postpartum depression. All 8 women who were seen did receive information about family planning. Among the cohort of mothers who experienced the death of their infant and received a visit, 6 (75%) receive specific information and follow up related to the cause of their infants' death.

Anemia

Based on the clinical guidelines set for the project, mothers with hematocrit levels of 32 or less at hospital discharge were considered to have anemia. Data were pulled from the hospital lab data and notes in the hospital discharge summary. Among this study population, 47% (186) had a hematocrit of 32 or less. Thirty-eight of these mothers (20%) did not receive a postpartum visit. Of the 148 mothers with anemia who received a postpartum visit, only 16% (24) were tested at the postpartum visit for anemia. Among these 24 women, 2 had a follow up plan recorded in their postpartum note. This initial number of women who tested positive for anemia is high compared to the population percentages found in the literature. However, as Bodnar and colleagues have found, about a quarter of low-income pregnant and postpartum women are anemic and/or have iron deficiencies.(44) These conditions can impact a woman's health and ability to function overall. The chart review findings suggest

there are a large number of patients in the OB Program who have low hematocrit levels and potentially a large group of women who do not receive needed follow up screening. Further investigation into anemia screening and retesting at UNC is recommended to better understand and interpret these results.

Diabetes

Based on the information available in the WebCIS database, it appeared that 13 women (3%) had diabetes prior to pregnancy. Of the 13 women with diabetes, 9 (69%) were obese. Among these women, 3 (23%) did not receive a postpartum visit. However, of the women with diabetes who received a visit, most (90%) received some kind of follow up care or referral. Laboratory results from prenatal glucose tests were reviewed the in WebCIS. All but 13 women in the sample cohort had data in WebCIS from their glucose test. Within the study population, 38 women (9%) had pregnancy-induced diabetes (gestational diabetes). Of the mothers with gestational diabetes who had a weight recorded, 15 (68%) were obese. Among these women, 6 did not receive a postpartum visit. Of the 32 mothers (84%) who received a postpartum visit, 63% did not receive follow up screening per the American Diabetic Association (ADA) guidelines. This finding is consistent with the studies by Smirnakis and Baker that found that only about a third of women with gestational diabetes are screened per ADA guidelines postpartum.(106, 107) Within this study cohort, only 2 mothers who had gestational diabetes received any noted counsel on nutrition and weight at her postpartum visit.

Hypertension

Information about hypertension prior to and during pregnancy was determined based on comments made in the labor and delivery discharge note and/or by comments written in

the postpartum discharge notes. Within the study population, 10% of the women (40) had hypertension prior to pregnancy. Of this group, 85% (34 women) received a postpartum visit and 39% (12) had a follow up plan. Unfortunately, 61% of the women with pre-existing hypertension did not have a follow up plan described in their discharge summary. Pregnancy induced hypertension was even more common in this population with 19% (74) experiencing some form of high blood pressure. Of this group, 78% (58) received a postpartum visit. Of these mothers, four women (7%) were noted to have high blood pressure postpartum and were given a follow up treatment plan. The other 54 (93%) were not given a plan nor was there specific mention of their hypertensive history or experience in the postpartum note. It is likely that a good portion of the women who were not given a plan had blood pressures that had returned to normal or were borderline at the postpartum visit. As such, providers may have felt that no further discussion or information was required. Others did not have a blood pressure noted in their postpartum note so it was difficult to determine if they had been assessed for hypertension during their postpartum visit at all. Samwiil's study found that only about a quarter of women with pregnancy hypertension were re-screened postpartum to insure their blood pressure had returned to normal.(108) This study seems to support his results in terms of lack of provider follow up for this condition. Sixty percent of the mothers with pregnancy-induced hypertension and 86% of mothers with chronic hypertension were obese. Only two of these mothers received any counsel on nutrition and weight loss.

Overall, mothers who had high-risk medical conditions during pregnancy and/or experienced a poor birth outcome were also at risk for not receiving a postpartum visit. Additionally, they were at risk for not receiving all the services and follow up care they need.

As a result, some of the mothers may continue to have unmet mental and physical health concerns. They also represent a significant missed opportunity for preventive care.

Aim 4: Health Care System Factors that Affect Utilization and Services - Resident and Faculty Comparison

One reason for sampling equally from resident and faculty patient files was to assess if there was a difference between the services provided by level of training. In a teaching institution, residents practice under faculty so one could assume that the services they offer would be similar. Table 10 below compares the provision of core services based on provider training. These are the same services included in the core service configuration described previously. Table 11 describes information about the services provided.

Table 10: Faculty and Resident Core Postpartum Service Provision

Services	Faculty	Resident	X²
Well-woman Visit Recommendation	116 (74%)	74 (39%)	P=0.001
Postpartum Depression Screening	145 (88%)	117 (85%)	P=0.527
Ask About Return to Sexual Intimacy	78 (47%)	66 (48%)	P=0.923
Maternal Infant Bonding Assessment	1 (1%)	17 (13%)	P=0.000
Breast Examination	71 (43%)	40 (29%)	P=0.013
Substance Use Assessment	18 (33%)	37 (67%)	P=0.000
Vitamin Use Recommendation	34 (21%)	27 (20%)	P=0.847
Family Violence Screening	2 (1.2%)	(7) 5.1%	P=0.050
Family Planning Provided	147 (88%)	140 (97%)	P=0.002
Weight Recorded or Discussed	105 (52%)	97 (48%)	P=0.848
Weight Discussed	8 (5%)	7 (5%)	P=0.925
Pap Smear (Provided or Recommended)	109 (66%)	113 (83%)	P=0.001

The residents and faculty were also compared using the service index. A Pearson Chi Square test suggested that there were significant differences between the two groups. Both

groups were most likely to provide between 5 and 6 services per patient, but overall faculty were slightly more likely to provide more services than residents.

Table 11: The Number of Services Provided at the Postpartum Visit by Resident / Faculty

	0	1-2	3-4	5-6	7-8	9+	Mean # Services	X ² 0.033
Resident	31 (16%)	29 (15%)	47 (24%)	59 (31%)	22 (11%)	5 (3%)	3.81	
Faculty	20 (10%)	30 (15%)	48 (23%)	90 (43.5%)	16 (8%)	1 (.5%)	4.03	

Similarities in Practice

There was no significant difference in faculty and resident practice for five service areas. These included: postpartum depression screening, inquiring about return to sexual intimacy, multivitamin use recommendation, weight discussed, and weight recorded or discussed. Similar to the overall findings for the study, both faculty and residents did well in doing postpartum depression screening in some fashion. The high prevalence of counseling for postpartum depression suggests overall provider compliance with new clinic protocol for screening. It also suggests that faculty and residents alike have been informed of the policy repeatedly over time. This may also reflect the fact that there are resources available in the clinic for referral. The presence of a psychiatric nurse in clinic two days a week may also serve to reinforce this policy for all providers regardless of their training level.

Unfortunately, neither group did well in talking with mothers about their return to sexual activity, their weight, and about vitamin usage. Less than half of the women were asked about their sexual activity – an important concern for new mothers and their partners. Less than a quarter of all women received recommendations about multivitamin use, a straightforward message that basically only requires a provider to encourage a woman to switch from her prenatal vitamin to a daily multivitamin from that point forward. Finally,

only 5% of either group noted that they had discussed issues of weight and nutrition with their patients. Studying a subgroup of patients with hypertension, the data indicated that residents and faculty had similar practice patterns in terms of postpartum screening and follow up.

These similarities in practice highlight areas that clearly receive more emphasis (postpartum depression screening) than others (vitamins). This suggests that interventions to improve the amount of counseling offered by faculty and residents in areas such as weight management and vitamin use need to include both faculty and residents. In these areas, resident practice mirrors faculty practice, something that is to be expected in a teaching hospital.

Differences in Practice

There were seven service areas where there was a significant difference in the services provided by faculty and staff. Some differences are to be expected as residents have less experience than faculty. They also tend to serve a disproportionately low-income population who may have higher risks for certain problems. Residents may also write more detailed postpartum visit notes as providing this care may be new for them. As a general observation of the chart review, resident notes tended to be lengthier than those of faculty.

Faculty were more likely to provide women with information about the timing of their next well-woman visit than residents. This may reflect the fact that faculty are more likely to see their patients annually than residents, who have less continuity of care with patients. They were also more likely to conduct breast examinations for their patients. They were less likely to talk with their patients about a Pap Smear test. This again may reflect an increased continuity of care among the faculty patients, who may be more likely to receive

annual care. It may also reflect the practice of some Maternal Fetal Medicine specialists who only see very high-risk women during pregnancy and therefore may not have the same longer-term relationship potential with their patients as their counterparts in Women's Primary OB practice.

Residents were more likely to ask patients about substance use, family violence, and maternal/infant bonding than faculty. This may reflect the higher risks of the population they serve. It may also reflect some prejudice within the clinic culture that mothers seen by residents are more likely to have problems with substances and violence. It is important to note, that neither groups did well in providing these services. None-the-less, residents screened twice as many women for substance use and three times the number of women for violence as faculty. While they only recorded information about maternal and infant bonding for 17 women, faculty only recorded this conversation for one mother. Residents were also more likely to provide or recommend a Pap Smear and to provide family planning services than faculty. It is not clear if these differences are due to provider style and training or provider perceptions about the Medicaid / Uninsured population needs. Interestingly, residents were more likely to have their patients with gestational diabetes re-screened at the postpartum visit than faculty. These additional services may indicate that residents are aware that many of their patient population will lose access to medical care 60 days postpartum.

Supplement to Aim 2 - Observation of the Utilization of Care at UNC in the First Year Postpartum

While the utilization of postpartum care beyond the 6-week postpartum visit was not a specific aim of the study, information about additional visits at UNC was recorded in an effort to develop a larger picture of the postpartum care study participants received. These

data offer only a snap shot of the health of the sample cohort during the first year postpartum and were not checked for completeness against other databases. The information collected reveals some of the mothers' health issues that may or may not have been reflected in their postpartum note or hospital discharge summary. It also reflects information collected in the literature review, which suggests that new mothers have a variety of health needs well into their first year postpartum.(25, 27-29, 32, 35)

Seventy-one percent of the women in the sample (282) made at least one additional visit to UNC in the first year postpartum. Of the women who had one or more follow up visits, 43 (16%) did not receive a postpartum visit and 220 (84%) did receive a postpartum visit. The range in number of visits received was 0 to 20. Twenty four percent of the women received one additional visit, 15% received two additional visits and 16% received three additional visits. Not all visits within the UNC Health Care System are entered into WebCIS and over half the visits only noted the reason for the visit. They did not have a clinic note entered. Another 38 women had visits with no clinic note or reason for the visit noted. The incompleteness of these data is problematic in regard to continuity of care at UNC as well as for future research on postpartum health needs. As such, these findings, while of interest, warrant further exploration before firm conclusions may be drawn about postpartum health service utilization at UNC.

There were many reasons why women returned to UNC for additional health services. In fact, 22 categories of needs were recorded with services ranging from care for normal postpartum health concerns to serious trauma and stage four cancer. The most common reasons for women to receive a visit were for immediate postpartum health concerns such as staple removal and wound care, followed by family planning visits, well-woman visits, and

postpartum general health concerns such as backache and fatigue. These visits are to be expected based on the literature review about maternal health needs postpartum.

The next group of reasons for return visits was for postpartum depression, OB visits (including for a subsequent pregnancy), and general health concerns such as earaches and strep throat. According to the data available in the chart, 7% of the women in the sample had returned to the UNC obstetric program for a subsequent pregnancy. Two women had received follow up visits to discuss a future pregnancy or to have invitro fertilization treatment (IVF). The number of serious health concerns such as cancer and trauma seems high for this sample size. However, the UNC obstetrics program with eight Maternal Fetal Medicine Specialists cares for a variety of high-risk patients. Finally, these data suggest that obstetricians at UNC do offer some primary care whether they believe that is their role or not. They also serve as an important gatekeeper for other women's health concerns. The table below highlights the range of care patients receive at UNC in the year following the birth of a baby. As mentioned previously, some women received multiple visits for different concerns.

Table 12: Reasons for Additional Care at UNC

Reason For Visit	Number of Women Who Received Care
Wound care, staple removal, abscess, blood pressure check, mastitis etc	59
Family Planning	57
Well-woman Examination / Pap Smear	56
Postpartum Concerns including backache, headache, fatigue, pelvic pain, incontinence, abdominal cramps etc	48
Appointment but no note	38
Postpartum Depression	28
OB visit (purpose of visit not specified)	27
Earache, strep, respiratory congestion, asthma	24
Cancer, seizures, head trauma, chest pains, other severe conditions	23
Dysplasia, pap follow up, cysts, colposcopy (GYN)	19
Dermatology	14
STI Follow Up	8
Colorectal issues, gastroenterology	5
Diabetes / Hypertension Management	4
Thyroid Disorders / Problems	3

Reproductive Life Planning / IVF	2
Nutrition Consult	2
Endocrinology, Arthritis	2
Infant Feeding	1
Suicidal	1
Substance use	1
Completion of Work Form	1

Discussion

The study's review of patient charts to discern postpartum utilization and content of care proved instructive. Data suggest that there are improvements that could be made at UNC in terms of postpartum visit utilization and the content of care. They also highlighted several areas of practice difference between faculty and residents. Supplemental information affirmed other research findings that new mothers do indeed have a host of health needs postpartum.

While the overall postpartum utilization rate of 82.5% was above the national average, 17% of the new mothers at UNC (70) did not receive a postpartum visit. Among these women were mothers who were anemic, hypertensive, diabetic, and had experienced a poor birth outcome. There was also a significant difference in postpartum visit utilization for certain populations. Women with Medicaid or who were Uninsured, young, African American, Hispanic, single, and had two or more children were less likely to receive postpartum visits than other mothers. Patients seen in the resident clinic were less likely to receive a postpartum visit than patients in the faculty clinic. This might suggest that outreach, marketing, and support is could help UNC to better promote and encourage all mothers to have their postpartum visit. Interventions should be particularly targeted to the mothers described above.

The content of care provided during the postpartum visit at UNC was also variable. Services such as family planning and depression screening were the most likely to be offered to all women. Screening for family violence, substance use, and issues related to maternal and infant bonding were the least likely to be done. Further, discussions around weight and nutrition were only documented for 15 women within the entire cohort of patients. This is particularly surprising given the number of women in the sample size who were overweight or obese. The number of services women received at the postpartum visit was also variable. The average number of services was four with a range of women receiving no services at all to those who received nine services. Some women were more likely to receive more services than other women. Mothers who had Medicaid or were Uninsured, African American, Hispanic, young, and single received fewer services per visit than other women. While there are many factors that influence a clinical encounter, the variance in number of services received suggests a possible need for a more specific, widely adopted postpartum visit template with designated services that are to be completed for all patients.

The chart review also illuminated some potential practice issues in caring for high-risk patients postpartum. Approximately 20% of mothers who had preterm infants, anemia, diabetes, gestational diabetes, hypertension, and pregnancy-induced hypertension did not receive a postpartum visit. Over 30% of mothers whose infants died did not receive a visit either. There were also gaps in the follow up care provided to these high-risk mothers with many mothers not receiving follow up care specific to their condition. This suggests that targeted outreach to these mothers may be required to increase the number who are able to access this visit. It might also be useful for the UNC OB Program to consider reviewing their algorithms and clinical protocols for these conditions. Decisions about screening cut points

and standard practice for these follow up for conditions should be made and then reinforced through rapid quality improvement cycles.

A review of the services offered based on the provider's background found some practice areas that were consistent – both in positive and negative ways. Family planning care and assessment for depression were offered by both groups of providers at a fairly high level. However, important areas such as discussion about weight and nutrition postpartum were equally done but at a very low level. Differences in practice between faculty and residents were also found. Women seen by faculty were more likely to receive a postpartum visit than those seen by residents. Further, there are clear differences in the populations cared for by these two clinics, with low-income, minority, and single mothers more likely to receive care from the clinicians with the least training and experience. Interestingly, there were several areas where residents were more likely to provide services than faculty. It isn't clear if this is a result of the needs of the two different populations, a function of experience, or simply the result of more complete dictation. None-the-less, there are differences in care between the two clinics that should be taken into consideration when planning any quality improvement activities and learning opportunities. In sum, there is much room in the UNC Obstetrics program to improve the utilization and content of postpartum visits.

CHAPTER FIVE

KEY INFORMANT INTERVIEW RESULTS

The questions posed to key informants focused on the UNC health care system, its influence on utilization and services, the gaps in care that may exist, and potential solutions. The interviews were structured to respond to the research questions in Aims 4 and 5 by collecting two kinds of data: 1) factual information about services, policies, and processes at UNC, and 2) opinions and ideas about the system and services themselves. Approximately half of the questions for each interview were developed specifically for the individual being interviewed based on his/her area of expertise and influence. The information shared in these interviews reflects the knowledge and opinions of the informants about the current state of postpartum services at UNC.

Informants

A total of 19 individuals were interviewed, reflecting a diverse group of UNC staff and faculty. The participants represented a number of disciplines including nurses, administrators, nurse midwives, social workers, genetics counselors, and physicians. The areas of influence include:

- Leadership within the Prenatal Clinics
- In-Patient Education for NC Women's Hospital
- Lactation
- Department of Psychiatry
- Women's Health Information Center

- Center for Maternal and Infant Health
- Prenatal Genetics
- OB/GYN Telephone Call Center
- Maternal Fetal Medicine
- Administration for NC Women’s and Children’s Hospital
- Administration for the Department of OB/GYN

Analysis

The interview data were typed into word documents, cleaned, and uploaded into an Atlas.ti 5.2 program. During the first analysis, 13 different codes were used to classify the data. During the second review, several codes were associated with each other and eight themes began to emerge. These themes facilitated the interpretation and initial understanding of the data. The number of statements per theme gives a sense as to where the informants focused their thoughts and responses during the interview. The themes and number of statements made within those areas are described in Table 13.

Table 13: Key Informant Themes and # Statements Coded Per Theme

Themes	# Statements
System Challenges	74
Service Gaps	66
Available Services	43
Ideas for Service Improvement	52
Quality Indicators / Improvement	16
Opinions about the Postpartum Visit	19
Areas for Further Exploration	10
Good Practice Examples	9

The statements made by informants most commonly reflected *system challenges* and *services gaps* at UNC. Comments in the *system challenges* category focused on denoting specific problems and issues faced around the care women receive. Comments in the *service gaps* category were specific to areas where services were needed but not present. While system challenges many times lead to gaps in care, the statements in these sections were specific in their focus on what was working and what was not. Many respondents followed up statements about challenges or concerns with ideas for improvement and areas for further exploration. Statements included in the *available services* theme largely provided specific information about postpartum care and related services at UNC. These comments were particularly useful in explaining some of the consistencies or inconsistencies discovered during the chart review. They also helped piece together a better picture of the overall system of care around postpartum care in general at UNC.

The informants had a large number of ideas for ways to improve the postpartum visit and care for new mothers in general. These suggestions were captured in the *Ideas for Service Improvement category*. The data in this section reflected opinions about service improvement across almost all of the 19 job functions covered by the informants. It was interesting that regardless of whether this specific question was asked or not, most informants had ideas to share for improvement. This may in part reflect the type of people that are in leadership positions at UNC. While they can identify problems, they also can describe ways to address them. Lack of resources was commonly cited as a barrier to implementing the ideas mentioned. Of the thoughts offered about service improvement, some were very specific and pragmatic while others were ambitious and less practical. Many informants had

ideas that they were able to share instantly which suggest they had given them some prior thought. Others had to take some time to think about what they would do to change care.

While *quality improvement* could be considered part of the *service improvement* category, there were enough comments around quality improvement that they merited a separate category. Further, while quality improvement often leads to improved care, it also involves a closer tracking and analysis of data, particularly around service delivery. There were a number of comments shared that reflected individuals' opinions about the postpartum visit. Many related to the timing and number of visits. Items coded under *exploration* included issues that the informant wanted to personally explore or areas he/she recommended that the study consider investigating in more depth. *Good practice examples* described programs or systems that were working well – at UNC or another institution.

All of the informants were very receptive to the interview and to answering the questions. At the same time that they were willing to share the system issues and problems in the interview, they were also eager to share ideas for ways to address those gaps. In a few cases, informant statements refuted each other in terms of service delivery or protocol at UNC. For example, there were differing opinions as to whether or not mothers in the resident clinic were matched with specific providers, such as the one who may have delivered their baby, for their postpartum visit. These inconsistencies are a finding as they demonstrate that policies and knowledge about services delivered may not be universally known, accepted or believed.

After a review of all the data based on these themes, the data were reviewed based on the research aims that they were to answer. The various statements within the themes were organized to fall into five larger groupings as they addressed research questions 4a, 4b, 4c,

5a, and 5b. They are reported in this dissertation from this perspective along with a summary of opinions about good practices and the postpartum care new mothers receive. The most challenging segment of data to describe were the many ideas listed in the *service improvement* category. The responses were so varied and rich that presenting them in list format was selected as the best way to initially share the results.

In the sections below, the information collected through the interviews is presented, often broken into smaller subcategories within each aim. Efforts have been made to preserve the informants' voices are reflected below. The comment sections reflect the voice of the interviewer from a broader perspective and synthesis of the data.

Aim 4a: Health Care System Factors that Influence Utilization

Appointments

A number of informants were asked about the process of scheduling postpartum visits at UNC. For UNC Obstetric Clinic patients, the nurse at the front desk schedules the postpartum visit appointment. She reviews the daily delivery log generated by labor and delivery and makes the appointment. She also cancels any planned prenatal appointments that will no longer be needed. The patients are then given their postpartum visit appointment date when they are discharged from the hospital. An appointment reminder is mailed to the woman's home and the automated call system leaves a reminder message for her two days prior to the appointment. Since the clinic has a backlog, it can be difficult for the mother to reschedule a missed or inconvenient appointment.

Women are given two 15-minute clinic slots to make time for 30-minute postpartum visits. However, several informants suggested that it is likely that some of the postpartum visits end up being only 15 minutes. Patients with Medicaid and Private Insurance now

receive equal time for their postpartum visit. This was not always the case in the past, when these patients were only allocated a 15-minute postpartum visit time slot. There are some exceptions to the postpartum scheduling system. A few patients may be seen in the family planning clinic in the postpartum period, particularly those who wish to have an IUD or be sterilized. This visit to the family planning clinic for some women may double in the system as their postpartum visit. Mothers who received services through the Center for Maternal and Infant Health during their pregnancy have additional follow up from their care coordinators. The coordinators check the schedule and make sure that these mothers have a visit scheduled and do what they can to facilitate the mothers receiving that care. These mothers often have infants who have serious congenital anomalies or who may have died following birth. Beginning in June 2007, the Center also works with mothers in the intensive care nursery to encourage them to schedule their postpartum appointments. These mothers, however, may have received care from outside of the UNC Obstetric Clinic system. This new service was not in effect for the period of time from which the chart data were reviewed. Thinking beyond the postpartum visit to the mother's annual well-woman examination, the clinic does not have the capacity to schedule a woman's future appointment at her postpartum visit. They also do not send reminder cards to patients to encourage them to schedule their annual well-woman examination.

Information about the Postpartum Visit

Questions were asked to a number of informants regarding the information given to pregnant and new mothers about the postpartum visit. All of the respondents noted that they did not give women any specific information about the postpartum visit. Several said they would distribute this information if they had it. All women receive a postpartum care guide,

which is distributed at hospital discharge. This guide provides new mothers with information about self-care and infant care during the first two weeks after giving birth. It does not contain information about the follow up postpartum visit at 6-weeks nor a reminder to attend that visit. A great deal of effort was put into the development of the booklet and informants suggested that not including this information in the booklet was not because it was unimportant rather it was an oversight. None of the websites for mothers and infants at UNC (including the OB/GYN Department pages, the Center for Maternal and Infant Health, and the Women's Health Information Center) contain information about postpartum health concerns. With the exception of postpartum depression, there are not any patient education sheets available on this topic either.

A number of informants noted that they did not provide good information about the postpartum visit, did not encourage women to come, and could do more to improve the care they give during the visit. One person felt that there was an assumption that women would come back for the visit because they need signed consent to return to work. Another person refuted that statement by saying that many companies were no longer requesting such a form. A different informant noted that there are problems in getting some moms to return to the clinic for repeat visits once they have received a prescription for medication, particularly antidepressants. In some cases the women need to return in two weeks to be seen in order to ensure that medication is appropriate. When they don't return their refills can't be given. No one has looked into the reasons why these mothers do not return although one informant noted it is likely that some of them no longer have health coverage to pay for the cost of the drugs. Other mothers who receive services in the resident high-risk clinic often come from a distance to UNC. They may not come back for the postpartum visit because of the cost of

gasoline, the difficulty in traveling far with an infant, and not knowing why they need the visit. Overall, informants suggested that UNC is not effectively marketing or promoting the postpartum visit at this time.

One informant noted that she felt worried about some groups of mothers when they were discharged from the hospital. Her responses were focused on the larger population of women delivering at UNC, not only those seen in the UNC clinic. She didn't know if certain groups of mothers received needed follow up care. The patients whom she felt were at-risk and in need of more care in her opinion were teen mothers, complex families with children already in the DSS system, and breastfeeding moms and babies who don't quite have it "right" yet. The informant's main concern for these mothers is that they did not have the support postpartum that they needed. She also had specific concerns for the many Hispanic mothers who deliver at UNC with Emergency Medicaid but leave the hospital with no further access to care and support. She noted that if something wasn't quite right with mom or the baby, she wasn't sure if these dyads were able to get the care they needed post discharge. The informant noted that mothers who are identified as having substance use programs are routinely referred to the Horizon's Program. These referrals do receive follow up by the clinic. This program provides follow up contact and care to mothers during pregnancy as well as after the birth of the baby. The Center for Maternal and Infant Health provides follow up for mothers who have babies born with congenital anomalies, including visits while their babies are in the intensive care nursery. The Center also schedules and facilitates postpartum visits for its patients. These programs were considered to be helpful for the mothers they served. There was a desire expressed that more mothers could receive this kind of care.

Clinic Capacity

According to several informants, there is currently limited visit capacity in the UNC OB clinic, with a backlog of several hundred patients. The OB/GYN clinics also have a high “no show” rate estimated at almost 60%. One informant provided more detail about the booking challenges faced by the UNC OB clinic. Health departments may make several appointments with various providers in an attempt to get the earliest visit they can. However, they may not go back and cancel the appointments they don’t need. They are moving to a different referral process to try to address this issue. Two informants noted that there is a UNC Healthcare system effort known as PACE (Patient Access and Efficiency Initiative) which has been taking a very close look at clinic flow and function. They are studying everything about the systems with the goal of improving efficiency and patient satisfaction.

Further, it is difficult for the clinic to follow up on missed appointments, as many telephone numbers provided by the women while they are pregnant are no longer accurate postpartum. One informant estimated this to be the case for one-third of the women.

Language is a barrier for follow up calls.

Comment

According to the chart review, UNC does better than the national average in postpartum visit utilization. UNC doesn’t, however, appear to have any particular system in place that would explain this slightly higher than normal return rate. There are not any outreach efforts employed to encourage women to return for this visit. The staff work hard to be sure that a woman doesn’t leave the hospital without a scheduled appointment. The hospital also provides two separate reminders about the visit. The problems in rescheduling

the visit for women who need to do so are more concerning. However, this is part of a larger scheduling issue in the clinic that is being addressed by administrators.

Some comments made by informants suggest some disparities in care at UNC. The fact that all postpartum visits are now of the same length of time for both faculty and resident clinics also suggests that there was a time when patients seen by residents received shorter visits. Informants also implied that at present not all women receive a full 30-minute appointment. With so many services to offer at this visit, it is concerning that the length of visit isn't consistently at least 30 minutes for all mothers. Further, respondents raised concerns about gaps in postpartum services for Hispanic women. Many of these women are low-income and speak limited English. As such, their access to care after they have a baby may be limited. At the same time that the institution's ability to provide linguistically and culturally appropriate care is also limited. The system at UNC does not seem well suited to meet the postpartum needs of these patients. Linking these mothers as well as other low-income women back to a public health clinic setting for postpartum care and family planning services may be one way to improve care. At a minimum it might address respondent concerns about follow up for mothers who start a contraceptive method or a medication and then do not return to UNC for needed care.

Pamphlets, booklets, or other patient education materials about the postpartum visit are not currently available at UNC. However, an online search of professional websites and patient education agencies only found a single fact sheet about the visit at only one site. So access to easily distributable information about this visit isn't readily available for purchase and use by the clinic. Augmenting the information available about the postpartum visit and a woman's physical and mental postpartum adjustment may be instructive for patients as well

as the providers who develop these products. Information describing the reason for the postpartum visit and its content might help improve utilization.

Aim 4b: Health Care System Factors that Influence the Services Provided

Prenatal, In-Patient, and Postpartum Services Available

Many informants were asked questions about the various services and education available for pregnant and new mothers at UNC. There is a wide range of educational services available to pregnant women at UNC. These include: breastfeeding classes, new father “boot camp” training, prenatal yoga classes, tours of labor and delivery, pet adjustment to new baby class, new baby preparation classes, and childbirth education classes. None of these classes are offered free of charge. The vast majority of these classes are taught only in English. One informant noted that only a portion of mothers who receive prenatal services at UNC attend childbirth classes. The OB clinic offers a class in Spanish for mothers with gestational diabetes. This class was put in place due to the high number of Hispanic women referred to the UNC high-risk clinic for management because of this condition.

Information about postpartum health at UNC is limited. One of the childbirth educators who teaches many classes noted that she spends about one hour during the last class talking about the importance of the postpartum visit, the need for birth control, and what to expect as a new parent. Childbirth classes do not currently hold reunions. This represents a lost opportunity not only to evaluate the classes but to provide additional information about postpartum and interconception health to new mothers. UNC doesn’t offer contraceptive or new parent classes for postpartum families. One informant felt that overall UNC hadn’t thought about the kinds of classes that women need across their reproductive life span.

There is a free educational piece printed in North Carolina by the Healthy Start Foundation called Taking Care of Me. This is a magazine type booklet designed specifically for mothers and covers a wide range of interconception health topics for women. The OB clinic has copies of this booklet, but according to several informants hasn't been able to figure out a routine system for distribution to new mothers at the postpartum visit.

Prior to discharge from the hospital, new mothers receive education on issues of relevance to the immediate postpartum period. All mothers are given a booklet to take home in English or Spanish about what to expect during the first two weeks postpartum. This booklet, however, does not include information about the postpartum visit. Informants suggested that there was a great deal of work put into the development of the booklet. The omission of information about the postpartum visit was not intentional, rather an oversight on the part of the committee. While they are in-patient, mothers receive counseling about family planning with an estimated 60% leaving with some sort of plan. One informant commented that nurses talk with patients about contingency plans for the methods selected. The same informant also noted that new mothers received a great deal of important information at a time when they may be sleep-deprived and challenged in their ability to remember it all.

New mothers can call the "warm line" which gives them access to telephonic support for problems around breastfeeding. Lactation services are available both in-patient and out-patient. The lactation consultants counsel mothers based on their current needs. For example, if the mother is "me" focused they highlight the maternal health benefits of breastfeeding whereas if she has moved into being "baby" focused they highlight the benefits for babies. Their counseling also changes depending on how long the mother has been breastfeeding. The lactation "warm line" is important but one informant pointed out that there is a need for

more lactation counselors in order to be able to better serve both the out-patient clinics and in-patient rooms. Current lactation counselors are monolingual which creates barriers for mothers who speak Spanish.

UNC Obstetric clinic patients can call the UNC OB/GYN consult line free of charge if they have questions or concerns. The consult line is staffed by nurses and receives more than 100 calls a day. They take all calls regardless of health insurance. The line is not equipped to answer telephone calls in Spanish. Of the calls received by the consult line, one informant estimated that half come from pregnant women, 40% from gynecology patients, and 10% from new mothers. The most common postpartum concerns are bleeding and breast related. If mothers call with primary health care problems including asthma and colds prior to six months postpartum, one informant said that they may be seen back in clinic. If they are past 6 months postpartum, the same informant said that they are most likely told to see a different provider. In these cases, the nurses at the call center will try to refer mother to a different provider. Another informant, however, noted that the clinic would not see women for primary care needs and that it needed to do more to refer these mothers elsewhere.

Patients at UNC who chose to receive their care from certified nurse midwives can page a midwife 24 hours, 7 days a week with their questions. The midwives also may identify women at risk prenatally and then follow them more closely in the postpartum period as needed. Patients who receive care coordination services through the Horizons Program or the Center for Maternal and Infant Health have access to a social worker or nurse. Coordinators with the Center often visit their mothers while their babies are in the intensive care nursery. They also help the mother schedule and keep her postpartum appointment.

All women who have Medicaid for Pregnant Women in North Carolina should have access to a maternal care coordinator (MCC). When asked about how many of the women with Medicaid served at UNC had maternal care coordinators, one informant noted that if the woman lived in Orange County she received services from a care coordinator who was out posted to UNC from the local health department. She was uncertain as to how many Medicaid patients who lived outside of Orange County had a maternity care coordinator. Several other key informants were also uncertain of the number of mothers who received care coordination, but felt that very few were connected to this service. All of these informants were surprised to learn that many health departments provided postpartum home visits and close follow up to their patients receiving MCC services.

The prenatal clinic has a psychiatric nurse on site two days a week as a resource for mothers (prenatal and postpartum) who have symptoms of depression or other mental health issues. High-risk women with issues such as bipolar disorder are more likely now to be diagnosed during the prenatal period and followed carefully postpartum. Women can receive care for one year postpartum although the service is not free. According to several informants, some women may only come for one visit and others may come monthly. Seeing patients in the clinic seems to have decreased the sense of stigma and increase their willingness to seek services. Several informants felt that information about postpartum depression is very important and mothers should be well educated about their feelings after they have a baby, ways to care for themselves to reduce their risk for postpartum depression, and the symptoms of depressions.

UNC offers a perinatal mood disorder clinic every week and an evening support group twice a month. There is a perinatal loss support group for mothers who experienced a

pregnancy loss, stillbirth, or infant demise. Postpartum depression screening, counseling, and support have improved at UNC since the addition of the psychiatric nurse to the clinic and the institution of the Edinburgh depression screening instrument. However, there were still questions from one informant about who actually scores the Edinburgh tool, whether the score is written in the woman's record, and how well follow up is offered to all mothers who need it.

Service Gaps

Interviews also uncovered a number of gaps in services provided. One key area of concern focused on reimbursement for mental health services for women who have Medicaid for Pregnant Women. These women can receive mental health services while they are pregnant through 60 days postpartum. Patients who are identified during pregnancy as being at risk for postpartum depression receive needed services. They may also receive follow up and medication early in the postpartum period. However, most mothers with Medicaid for Pregnant Women lose access to funding for mental health services just after the time they complete their 6 to 8 week postpartum visit. As such, two informants noted that patients who are on medication and then stop before they are well, put themselves at risk for a much more severe experience with depression. Further, it can be difficult to put them back on medication when/if they are able to secure money for the drugs. Ethical dilemmas arise for providers when they need to provide care to mothers who screen positive for depression at their postpartum visit but who will be unable to pay for the medicine they need. While some women may be able to continue to see a psychiatric nurse through the charity care program at UNC it is likely that they will still incur some expense for those services. Several informants expressed great concern about this major gap in care.

Several informants highlighted deficits in providing information and counsel to women about weight loss and healthy eating. The clinic only has access to a nutritionist for patients with gestational diabetes. While there are nutritionists on staff at the hospital, they may not be readily available to meet the considerable need for nutrition services in the prenatal clinic. One informant felt that nutrition counseling was particularly important during pregnancy as careful and appropriate weight gain made postpartum weight loss easier for mothers. Several informants noted that no one really seems to talk with women about their weight. In fact, one informant described this as almost a taboo topic and a major gap in health care for women. Another informant stated that weight counseling and management was something that was just not done. While it was something that should be done, she was clear that it wasn't happening.

In addition to not talking with women much about weight, one informant noted that there was once staff in the clinic to facilitate service enhancements such as making sure that all low-income mothers were signed up for the WIC program while they were pregnant. However, without constant reminders from dedicated staff, it is easy for providers to slip back into standard practice and not provide these kinds of services. In addition to providing healthy food options for mothers and babies, many WIC programs in North Carolina also provide breastfeeding support and nutrition information services. Health departments are very proactive in bringing all eligible mothers and infants into this program.

Several informants noted that there are no policies in place regarding bringing the infants to the postpartum visit. They felt that nurses and midwives are more likely to encourage mothers to bring the baby while the physicians may be less likely to do so. It can be difficult to assess maternal and infant bonding without the infant present at the visit.

Two informants commented that the clinic staff and providers really don't talk very much with mothers about coping postpartum. Some mothers may have limited support and many major life challenges. The addition of a new baby is often one additional stressor on top of many. Mothers need more attention and time to talk about how to manage competing priorities and to care for themselves.

Three informants expressed frustration at the challenges the clinic faced in providing new mothers with ongoing services such as family planning. There were concerns that mothers who started a particular method, such as Depo Prevara, never returned to UNC for their next shot or prescription. Due to time constraints, they are unable to follow up on these mothers. They are not having conversations with these mothers about where they will go for follow up care. At present, mothers may leave the postpartum visit with some kind of family planning method, but without a plan as to how they will continue to access that method and receive family planning care. One informant offered the example that the clinic may give a woman her first dose of Depo Prevara, but the woman may be unable to return to UNC and instead go to a local health department to receive a second shot. At this point in time, the woman will face barriers to care because the local providers are unaware of the services she received at UNC. The OB clinic has been working to increase access for low-income mothers to Mirena IUDs. The UNC LARC (Long Acting Reversible Contraception) program has been able to make this method available free of charge. This program is grant funded and represents the effort of one physician who is working hard to address this unmet need. The process of setting up a woman for this program and then inserting the IUD is very time consuming for the clinic staff and mother. The current system is not time efficient. One informant wished that the patient could complete the financial paperwork in advance of her

visit as this could reduce the amount of clinic time devoted to this process. This might work for some patients but others only decide to try an IUD after they have been counseled at their visit and know it is available. Regardless, this is a very important program at UNC that helps many low-income women access a contraceptive method that they wouldn't otherwise be able to afford.

Screening

One informant felt that the OB clinic was not able to make a difference in a mother's long-term health. She noted that they only ask a woman about smoking, domestic violence, and drugs face-to-face one time. This occurs at intake, often before the patient has developed a trusting relationship with the staff. If the mother does not respond that these are a problem, no one asks her again. Evidence-based best practice suggests that all pregnant women need to be screened more than once for substance use. She also noted that providers are not as responsive as they could be when women do screen positive, particularly for tobacco use.

Questions were asked to several informants about routine screening for clinical conditions such as diabetes. One informant spoke at length about the process of re screening for gestational diabetes. She felt that the current system was not patient friendly and not proactive. Protocol currently followed for the most sensitive testing result in the mother spending a significant amount of time in the clinic. There are other protocols that would be more patient friendly and could still serve as a marker to determine which women were fine and those who required an additional screen.

Anemia was another screening area that received several responses. One of the informants noted that mothers with a hematocrit at hospital discharge of 30 or less are to be retested at their postpartum visit. Another suggested that women with hematocrits of 28 or

less should be screened but only women with clinical histories that indicate they have a risk for anemia. Of interest, the clinic guidelines specified in the chart review and confirmed by a maternal fetal medicine specialist, set the cut point at 32. As such, the informant comments suggest some inconsistency in clinic protocol for re-screening. One informant noted that in the past they used a finger stick technology to test for anemia, however, they were concerned that the machine was not reliable. They now send mothers to the lab for a veno-puncture to screen for anemia. The finger stick results were available in a few minutes and were very easy to do. The mother may have to wait for some time at the lab for the test. A telephone call is then required to alert mothers of the results. While the tests may be more accurate, the additional time and effort may also deter more routine testing of mothers.

Financial Incentives for Service Provision

Several informants were asked about services available to low-income women who may have serious and/or chronic conditions diagnosed during pregnancy. They responded that women with Medicaid for Pregnant Women who are diagnosed with a serious medical condition are referred to specialists within the UNC Healthcare system where Medicaid will pay for their care while they are pregnant. As such, pregnancy and the first 60 days postpartum offer a window of opportunity for some women to receive medical care for other conditions. Low-income women with serious conditions may be eligible for charity care at UNC for these conditions after 60 days postpartum. No patient can be turned away from UNC for inability to pay, but they may be discouraged from accessing care by the process of receiving charity care. Patients need to meet with a financial advisor and complete paperwork in order to begin the process of receiving this care. Patients must reapply for the charity care program every six months. While the process of receiving charity care may be a barrier for

patients, some women with serious conditions who require more follow up will receive care at UNC.

Interviews with a number of informants found that there is not currently a financial incentive for UNC to expand postpartum care and services to new mothers. Medicaid for Pregnant Women pays a global fee, which is billed by UNC after the woman delivers her baby. The 6-8 week postpartum visit is part of that global fee as are most other obstetric visits or contacts within 60 days postpartum. New visits and additional outreach, therefore, generally do not generate additional charges. One informant noted that while there are CPT codes for non-physician phone contact at 7 days postpartum, they are not currently reimbursed by Medicaid. Further, UNC is able to bill patients for their prenatal care following labor and delivery, not after the postpartum visit. This again keeps the focus on the end of pregnancy – labor and delivery – not the postpartum visit. The psychiatric nurse is able to bill for her services through the Department of Psychiatry and a supervising physician there. However, the reimbursement is low so the volume of work must be very high to break even. Again, once a woman no longer has Medicaid, psychiatric services are not reimbursed for those mothers. Medicaid does not reimburse the CPT code for genetic counselors but will pay for genetic services if billed as a physician visit. Lactation services for all new mothers at UNC are covered by the hospital with minimum reimbursement from third party payers.

The North Carolina Family Planning Waiver does offer ongoing access to family planning for many mothers who had Medicaid for Pregnant Women. However, one informant noted that there is a lot of red tape as far as enrolling patients, billing, and service delivery. For example, the Medicaid Waiver program only reimburses certain kinds of contraceptive methods. These methods may be different from the ones reimbursed for women who have

continuing Medicaid coverage. The informant suggested that there are a number of reimbursement issues with the program that make it difficult for the OB/GYN department to justify their participation as service providers.

Low income women, particularly those who are undocumented or do not qualify for Medicaid for Pregnant Women have additional financial challenges. Women with presumptive Medicaid are only covered for a certain amount of time during their pregnancy. These women often use Emergency Medicaid to pay for their delivery, which does not pay for a postpartum visit for these women. Clinics provide this visit but they are not reimbursed. Most of the women in this group are undocumented Hispanic mothers. While many of these mothers receive their care from public health clinics that feed into UNC, this is a postpartum health issue that impacts UNC.

Several informants noted that any new service introduced to the clinic would have to have a revenue source. UNC does not have a lot of resources and needs to think carefully about any and all service additions. While there is an interest in providing more services, particularly phone calls to mothers during the first few weeks postpartum, there is also a widespread understanding that services can't be added without a funding source to sustain them.

Postpartum Services for Special Populations

One informant felt that mothers who had a poor birth outcome needed more immediate and intensive follow up postpartum. This group is at risk for a rapid repeat pregnancy and may not be taking care of themselves as they take care of very sick infants or cope with an infant demise. Another informant noted that the services provided to mothers who had a fetal or infant death are not always as good as they could be, especially in cases

where an autopsy is needed to understand the etiology behind the demise. Autopsy is not offered as much as it should be so families miss the opportunity to fully understand the risk factor for recurrence in a future pregnancy. The autopsy results are rarely available prior to the six week postpartum visit so parents may need to return for the results after that standard visit. Another informant suggested that the timing of the postpartum visit for some of these mothers needs to be reconsidered so as to better meet their needs. Genetic counseling should be offered to mothers who could benefit as this information can influence their reproductive life plans. A third informant highlighted that the services they provide to mothers of high-risk infants should be augmented. She noted that they knew they needed to do a better job of making sure the women had their postpartum appointment and that they should touch base with these mothers more frequently during the first months postpartum.

Several other informants highlighted the needs of a new and growing cohort of mothers who are having babies later in life. One suggested that there is an emerging body of literature that suggests these mothers have challenges with this major life change and the loss of their former identity. They may need additional counseling and may be more likely to suffer from depression than other mothers. The clinic and related websites at UNC, however, do not provide information that these mothers may need during this time of transition.

Finally, several informants noted that the Hispanic mothers who receive care at UNC were a population that needed more services and attention. The hospital has experienced a significant increase in the number of low income, Hispanic women who come to UNC for care. As a state hospital mandated to care for all populations, they now have a very large number of Hispanic patients. They also continue to have very limited resources. Informants discussed a number of challenges in serving Hispanics. Informants noted that Hispanic

patients tend to be transient which can make follow up difficult. Another informant noted that Hispanic mothers often relocate after the birth of the baby and therefore may not be able to come back to UNC for her postpartum visit. Another informant expressed concern that Hispanic mothers in particular are at risk for not receiving the information they need due to language and cultural barriers. Another informant noted that these mothers need more than just clinic visits. This group of mothers may need additional support and interaction. They may also have different learning styles and would benefit from different care models such as Centering Pregnancy. In spite of these needs, it is often expensive to provide outreach and classes to this group of patients. A different informant said that there are serious communication issues for the nurses and other clinic staff with their Hispanic patients. There are an inadequate number of interpreters available to assist providers, which leaves many providers and patients struggling to communicate. Patients received their appointment reminders in English. They are not given a single number that they can call with questions or concerns where information can be provided in Spanish. She expressed concern that Hispanic women are not receiving care they need because of this poor communication. Another informant suggested that it felt like reaching out to Hispanic patients was not a priority for the administration at UNC.

Comment

There are many different health care system issues that impact postpartum care at UNC. Medicaid policy and reimbursement is one factor. While health care providers and administrators alike can identify system gaps and suggest ways to address these gaps, reimbursement for additional services and outreach influences their capacity to make change happen. There are services that the clinic would like to extend to new mothers such as

telephone calls at 1 week postpartum that are not reimbursable. The clinic can't afford to pay for the additional staff time required to offer this service to all women. Medicaid's influence is even stronger when looking at the role of the postpartum visit in supporting a transition to well-woman care. At least half of the women served in the UNC OB program will lose access to medical insurance just after the time of their postpartum visit. Clearly, this decreases the financial incentive for the health care system in keeping these mothers linked in to UNC services. It also makes it challenging for providers who want to care for these patients longer term.

Respondents discussed the concept of shifting patients from UNC back to local care. This may be particularly important for low-income mothers who lose their access to health care after the postpartum visit. Steps such as asking a mother where she plans to get follow up family planning services and then faxing relevant health information to that provider would be a simple and low-cost way to increase continuity of care. It would also link mothers back to the health care safety nets that exist in North Carolina through the public health departments and community health centers.

Efforts should also be made to better utilize case management resources for mothers with Medicaid for Pregnant Women. Low-income pregnant women generally have access to maternity care coordinators to support them throughout their pregnancy, including the first 60 days postpartum. This would involve working with health departments in seven different counties to build partnerships and facilitate communication for this care.

There may also be some areas of clinical practice and protocol that warrant review and study. There are three clinical algorithms for the management of anemia. These algorithms suggested that an important cut point for treatment of anemia for mothers in the

first and third trimester of pregnancy is a hematocrit of 33 or less. There is not an algorithm, however, that describes clinical protocol for screening and management of anemia postpartum. Based on the different information provided by various clinic stakeholders, this is an important area to explore. Re screening postpartum for gestational diabetes is another area that deserves review. Based on the chart review, only a third of women who should have been tested according to the national guidelines. Some of this may be a result of the use of protocols that are not patient friendly. As these and other areas of follow up care are reviewed, attention clearly needs to be paid to the system in which the services are offered as well as to clinical guidelines. One possible way to improve postpartum care at UNC may be the use of rapid cycle quality improvements to address these specific issues.

The OB Program has made a strong and concerted effort to improve its ability to screen pregnant and new mothers for depression. The program should be commended for this effort, particularly for having a trained provider available for mothers within the OB clinic. Their efforts to use a validated depression screening tool should also be recognized. One informant commented, however, that the Edinburgh scores were not always recorded in the patient's postpartum note. This was confirmed by the chart review data. The score is an important guideline for the providers who will be assuming some care for these mothers. A strong passion for advocating for mothers was evident among several of the key informants particularly around discussions regarding lack of access to mental health care and medication for low-income mothers who had timed out of Medicaid for Pregnant Women. There is a strong desired to provide mental health care to pregnant and new mothers at UNC.

While UNC is progressive in one area of postpartum care, depression screening, the OB program is not doing well in others. UNC doesn't offer classes for new mothers, hold

childbirth reunions, provide much written health information to new mothers, nor does it include information about the visit in the hospital postpartum care booklet. In light of the many postpartum health issues experienced by new mothers, it is surprising that more information is not available. Increasing the amount of information available could benefit patients and clinicians alike.

Finally, the program has many challenges in its ability to serve Hispanic mothers, which impact the care mothers receive beginning in the prenatal period and moving through postpartum care. Mothers who speak Spanish do not have the same kind of access to consult nurses and lactation consultants as other mothers. With the exception of a Spanish-language class about gestational diabetes and hospital tours, they also do not have the same access to group classes. They may not receive equal clinical services due to language and cultural barriers. They are not likely to receive care from a health care provider from their cultural background who can speak their language. While central to the thesis of postpartum care, the manner in which UNC provides care to its Hispanic patients transcends the postpartum visit and impacts the entire service line.

Aim 4c: Health Care System Factors that Influence Provider Care

Scheduling

A number of questions were posed to different informants around the issue of integrated and continuous care at UNC for pregnant and new mothers. Informants noted that faculty providers very often see the same patients for the postpartum visit that they have cared for during pregnancy. This provides good continuity of care and increases the chance that the provider will be aware of health issues and needs for this patient. This is similar for women who receive care from the midwifery practice. They generally have their postpartum

visit scheduled with the midwife who delivered their baby or who they preferred to see during prenatal care. One informant noted that the front desk in the OB clinic tries to schedule resident clinic patients with the person who delivered their baby or someone who they have seen at least once in the past. Another informant, however, contradicted this statement by noting that there is not an effort to match a patient with a specific provider in the resident clinic. Another suggested that the rotation schedule of residents often results in women losing access to a preferred provider over the course of her pregnancy or between delivery and the postpartum visit. Several informants noted that it is not likely that the resident providing a woman with a postpartum visit knows her. Overall, faculty at UNC have better continuity of care and often saw their patients back for the postpartum visit while this appears less likely with residents.

Another informant regretted that the clinic no longer had a Teen Prenatal Clinic. She worried that even though the teen mothers were receiving care from the midwifery program, the midwives were as busy as everyone else and potentially unable to provide the extra care and mentoring the teens use to receive. She also noted that the clinic was overwhelmed with prenatal patients making it difficult to really know them. This is particularly true for the resident clinic patients. For the faculty patients, they generally see the same provider for each visit. The nurses feel like they have a handle on those patients and know them. In general there is a sense of ownership for these patients. The resident clinic, on the other hand, is more difficult. The patients see different providers and over all do not always feel “known” to the nurses. As a safety net provider, they care for a large number of mothers who are high-risk either medically or socially. They see many needs and struggle to have the resources and time to address them. This is compounded by the large number of women who speak Spanish

along with the lack of resources for the staff to communicate with them easily. The postpartum visit is important but it is part of a continuum of prenatal care. In her opinion it is difficult to separate the care offered at the last visit from the relationship and care provided previously.

Staffing & Training

One informant shared some clinic history highlighting that there had been a point in time when the least experienced nurses had been teamed up with the residents, the least experienced physicians. This was problematic in that the resident patient population tended to have more complex health and social needs. There were problems with people knowing who they were seeing, poor record keeping, and with these providers not having anyone to turn to for additional assistance and advice. Over time the department has been working to increase the skill level of the nurses in the resident clinic. This enhanced skill is important, as the nurse in this clinic often become the most familiar with patients. They often review patient charts before the visit, provide some general case management, and highlight important topics and tests that mothers need at each visit. This in turn benefits the residents and is meant to improve the quality of care. However one informant suggested that nurses are unaware if the resident actually reads their notes and follows their suggestions. They are not sure if this work necessarily improves the way they offer the visit.

One informant noted that UNC needed more lactation counselors in order to be able to serve the out-patient and in-patient clinics. She felt that the current number of counselors were unable to handle the volume of need present in a hospital with almost 4,000 deliveries a year. In addition to needing more lactation counselors at UNC, another informant noted a need for more certified health educators. The Women's Health Information Center has

experienced challenges in recruiting instructors, training them, and then retaining them once they are trained. This is due in part to the fact that their instructors who are new mothers are very enthusiastic but often have conflicts arise because they have young children at home. Health educators may also be somewhat transient and not stay long, even after resources have been invested to provide them training. The Women's Health Information Center could make more classes available to women if they had more certified instructors to teach them and greater physical space to meet the requirements of additional classes.

Resident Education

Informants noted that there is a constant training challenge within the clinics with new residents and fellows arriving every year. It is important to have continuous training and reinforcement around clinic protocol and policies. One informant felt there was a hole in the system as it relates to these newcomers. The informant was not sure how they were educated about policies and who took responsibility for doing so. From a broader training perspective, it was suggested that UNC does a good job at training residents on how to handle complex deliveries but does not do a good job in teaching them how to care for the general, low-risk population. It was felt that there is overall a lack of emphasis in the Schools of Medicine and Nursing on issues related to postpartum care and service provision.

Continuity of care for patients seen in the resident clinic is particularly challenging. With resident rotations it can also be hard for these women to establish a one on one relationship with their health care provider. The department has noticed that there is a difference in the continuity of care between the resident and faculty clinic. Residents also often staff the family planning clinic and provide a large number of postpartum visits. One improvement idea being considered is to pair up residents so there is a 1st, 2nd, 3rd and 4th year

resident on each team. This team then could provide some consistent care to patients over time and across reproductive life services. They are trying to create more of a team approach to resident care to improve this continuity. Not only could this improve patient care, it could give residents a wider perspective on a woman's needs between pregnancies. There are still many issues to be addressed in this new concept and it is unclear if this strategy will indeed increase the likelihood that a mother will have her postpartum visit with a resident with whom she has a relationship.

Communication

Two informants noted that there were many communication and information gaps at UNC. A major problem is the availability of information about the patient at her postpartum visit. At UNC, after delivery, the woman's prenatal record is sent to a team of nurses who abstract data from the record to populate the hospital discharge summary template. The prenatal record is sent to billing and then to medical records. As such, health care providers do not currently have access to the patient's prenatal medical record when they see her for her postpartum visit. All that is available to them is the hospital discharge summary. This is a particular challenge for residents who may not know their patients well and for faculty and residents who may have seen mothers for only a few prenatal visits prior to delivery. Further, the provider may not be aware that the patient experienced preterm birth, had a fetal or infant demise or had a traumatic delivery prior to the visit. Several informants noted that great care was taken in the development of the patient's prenatal record over the course of her pregnancy. These records contain a lot of important information about the patient. One informant noted that it was a tremendous shame that all of the information they had worked hard to develop about the mother was not in their hands for her postpartum visit. She also

commented that the style of the notes that providers write in the charts had changed over time. She said that the providers recently write copious notes. While this is helpful in creating a patient profile and charting the care provided, it was too much information for nurses to go through to prepare for each prenatal visit. Overall, the wealth of information in the prenatal records is in sharp contrast to the dearth of information available at the postpartum visit.

Informants also highlighted some communication gaps between out-patient and in-patient clinics. Nurses who care for new mothers in the hospital, chart their notes electronically, however, their notes are not linked to the patient's prenatal medical record nor are they available to the providers in the out-patient clinic or included on the discharge summary. As such, it is very difficult for them to communicate any major concerns or red flags that they see that warrant postpartum out-patient follow up with providers once the patient has been discharged.

While there are available resources for mental health services in the obstetric clinics, one informant felt the patient referral process for these services could be improved. A provider simply needs to post a note on WebCIS to the mood disorder clinic or leave a voice message and then they are absolved of responsibility for that patient. There is no follow up on their part to be sure the referral was received. One informant also noted that it could be very difficult for a nurse caring for women in-patient to make a referral to the mood disorder clinic. There are also some challenges for nurses who receive consult calls from women to get the provider response they need to complete the call. This is rotation and provider dependent. Further, they have no way to highlight any concerns they may have for a specific patient – one, for example, who has called multiple times with clear signs of depression.

While they have the capacity to write generic notes on WebCIS, clinicians do not frequently read these notes.

Several informants were asked about the quality of the written postpartum visit note. Some informants felt that some providers are more thorough in their postpartum care than others but generally what is recorded on WebCIS in the postpartum note should be reflective of the content of the care delivered. One key informant mentioned that the postpartum visit note only contained the information dictated by the provider. In truth, nurses are assessing new mothers while they check them in, weigh them, and get them ready to meet with the clinician. Based on her comments, it was apparent that nurses cover a wide range of important health topics during the postpartum visit. This information is entirely missing from the postpartum note. It is difficult to assess the impact of the nurses on the visits without documentation of the education they provide.

Comment

The information offered by key informants about the health care systems that influence provider care is seminal to the study. They brought to light a major health care system issue at UNC in the delivery of postpartum care. Health care providers at UNC do not have their patients' prenatal record in hand at the time of the postpartum visit. They are forced to rely on memory (if they've seen the patient before) and the hospital discharge summary. This information is cursory and sharply contrasted to the information available to them during prenatal care. This clearly impacts continuity of care and increases the likelihood that providers miss prevention opportunities.

Informants also pointed out disparities in care between the resident and faculty clinic in terms of provider education and continuity of care. Resident rotation schedules make it

unlikely that they will provide care to a woman from the start of her pregnancy through her postpartum visit. They also pointed out a series of other communication gaps – from clinician to referrals sources such as psychiatry, from in-patient nurses to clinic nurses, and from consult line nurses to residents and faculty. The impact of the larger system of care on the postpartum visit was also highlighted, a reminder that the postpartum visit may be in part a final reflection on a system of care. This system is challenged at UNC due to high volume and high need patients.

Another very important finding was that the health information that nurses share with patients prior to and after their visit is not recorded in the postpartum discharge note. As such it is important to note that the information collected in the chart review reflects only the content of care given by the residents or faculty. For this study, this suggests that women may receive more information and counseling than demonstrated by the chart review. It also suggests that while nurses are a vital part of the postpartum visit team, the services that they provide are under-reported and potentially under appreciated. This may have implications for other studies that assess the content of postpartum care based on clinical notes.

Aim 5a: Gaps that Should Be Addressed

A number of key informants noted that UNC could be doing better with the postpartum visit and that more could be done to improve the care they offer. There is a lot of focus on follow up care for infants but not much conversation about follow up care for mothers. More needs to be done to step back and really address maternal issues. One informant thought providers should ask a new mother about her sleep, what she is eating, and whether she is getting outside the home. Few people ask mother about how she is managing the transition and really caring for herself in these basic ways.

Another respondent highlighted that the postpartum visit is also a social visit of sorts. According to the interviewee, mothers want to see a familiar provider and share their experiences as new mothers. While some specialists may believe that other providers can provide the postpartum visit, most mothers still want to receive care from someone they know. This informant suggested that nurses also create a bond with patients. She thought that in the same way that a “new to nurse” appointment is scheduled for the first prenatal visit, that the postpartum visit could be scheduled in the same way. This could give nurses more time to address maternal concerns and needs.

One informant pointed out that the delivery of care at UNC and across the nation is very episodic in nature – very problem focused. Specialty providers tend to view patients by what is wrong with them while primary care providers are more likely to see the whole person. However, primary care providers are now under intense reimbursement pressure. So it seems that the system is set up to thwart continuity of care. Some women recently diagnosed with depression may be put on medication. When their medication runs out they are often unable to refill their prescription, which can lead to more severe depression without treatment. There are services for children who have suffered the impact of maternal depression but no funds for medication for mothers to help manage depression before it impacts the children. Two informants noted how short sighted it was to focus on children and neglect their mothers.

Monitoring certain performance indicators is one way to diagnose health system problems and improve care. The OB clinic does not track postpartum utilization, the percent of patients who return for additional postpartum follow up services, nor do they track postpartum women’s utilization of well-woman care and family planning care over time.

They do not have a way to track postpartum follow up services for mothers with gestational diabetes, anemia, hypertension, and/or other conditions. One informant noted that currently there are quality improvement initiatives in-patient to begin teaching mothers as soon as their baby is born so they can decrease the amount of time required before they are discharged. A challenge faced is that a quality improvement goal to reduce readmission rates, particularly for babies, may not be possible to achieve when done alongside an effort to speed up hospital discharge.

A number of informants were unable to answer questions about the flow of patients among care providers at UNC – particularly among different clinics such as obstetric, gynecology, and family planning. There was also not a clear picture as to where many of the patients received their regular health care, with an assumption on the part of one informant that low-income patients would need to use the emergency room when they had unmet health needs. After talking with informants, it did not seem likely that low-income patients received a warm handoff to other providers or clinics that serve as safety net providers. One informant said that she feels better referring patients to GYN services at UNC because she knows the providers. It is more difficult for her to refer to community providers and specialist groups at UNC. She writes down a name on paper but doesn't know if the referral receives follow up.

The postpartum visit note is likely to be the last piece of information on WebCIS about the patient's reproductive history and health. There is a lot of variability in what is reported in the postpartum note. A number of informants stated that there was a template for the postpartum visit although no one could locate a copy. One informant suggested that UNC does not have a system continuum for women's health. There is not a lot of linkage nor is there emphasis on women's health across a spectrum of needs and time. Some of this may

have to do with the reporting structure in place among the various leaders and clinicians. Several informants suggested that there are still significant silos in approach to the various components of care provided by the OB/GYN department.

The interviews suggested that there are needs women have that are not being met within the current system. One informant discussed an issue around the provision of bilateral tubal ligation for women after delivery. She estimated that up to half of women who would like a tubal ligation do not receive it. This is a provider/systems issue largely a result of the availability of anesthesia. If a woman delivers on a Friday or a Saturday the probability that she will receive a tubal ligation is low. This is an important basic need that she felt UNC was unable to meet. In her opinion, this suggests that we will have major challenges in meeting other such interconception needs.

Comment

Key informants confirmed the premise of this thesis by asserting that there are many different ways in which the postpartum visit could be improved to better serve as a bridge to well-woman care. Continuity of care issues were raised by many respondents. Disconnects in care exist between prenatal and postpartum care, in-patient and out-patient services, obstetrical care and primary care, maternal care and infant care, UNC clinics and other safety net providers, and a system within UNC to promote women's health across the reproductive spectrum. Informants also confirmed that there is variability in what is reported in the postpartum visit note as well as the care that is provided during the postpartum visit. The idea of utilizing nurses to provide the postpartum visit is an interesting one that deserves further exploration.

Aim 5: Recommendations to Enhance Postpartum Visits

Over the course of the interviews a wide range of diverse ideas emerged as to ways to improve the postpartum visit. These many thoughts and suggestions were grouped into categories and are reported below. The richness in this data reflects the diversity of the respondents and their many combined years of experience. The responses below are from the key informants. The comments sections provide my synthesis and commentary.

Postpartum Visit Utilization

- Local health departments are often very proactive in reaching out to their new mothers and bringing in the mother and baby for care. One informant suggested studying what health departments do to encourage mothers to come back for their postpartum visit. Local health departments and maternity care coordinators generally work proactively with women to make their postpartum appointment. There may be lessons from their work that could be applied to the UNC health care system.
- The addition of an advanced practice nurse to the resident clinic could assist with the volume issues around postpartum care and the provision of family planning services. Nurses currently in clinic could also have their time better utilized to increase access to early postpartum care for some mothers. Patients who need staples removed or blood pressure checks receive a 15-minute nurse consult visit. It might be possible to add more of these consult slots for new mothers.

Comment

The system of care provided to pregnant women and new mothers in health departments differs from that offered by major medical centers. In particular, the relationship of Maternity Care Coordinators (MCC) with mothers is likely an important factor in the

personal outreach for the postpartum visit. Contact with new mothers is also part of the deliverables for MCCs. With Medicaid and the NC Division of Public Health making such an important service available to low-income mothers, UNC should make more concerted efforts to utilize the MCC program to serve all eligible women under their care.

Create Consumer Demand

- Several informants suggested that the best way to improve the utilization and content of this visit was to create consumer demand for this care. They suggested that it would be wise to begin to promote the visit during the final prenatal clinic visits. The hospital should encourage mothers to return for their visit and pediatricians should be prepared to encourage mothers to return for their postpartum visit. Since many pediatricians have contact with the mother/baby unit at two weeks postpartum this may be an opportune time for this encouragement. One informant suggested that providers should empower women to think of three health issues they want to deal with at the postpartum visit. Women should be prepared to go into that visit with an agenda.
- Informants also noted that the first prenatal visit is generally a comprehensive visit. To make the postpartum visit more noteworthy, it is important to create more bells and whistles for the visit. This could be done by giving out more information and supplies to new mothers. A pharmaceutical group may be solicited to sponsor supplies or items. The packets could be given to the mothers by the front desk staff when they check in for their visit. This would give the mom something to look at in the waiting room. The clinic could do more to make this visit feel special. One informant referenced the fact that there are often volunteers at UNC who would have

the time to compile the packets. The content of postpartum visit should be enriched so it is worthwhile to the woman. Other staff can help augment services to make it a visit that is valued by women and an opening of the door to long-term wellness.

Comment

These ideas are very pragmatic and potential recommendations. As there is not an existing publication or product that the clinic can order about the postpartum visit, securing outside funds to produce such a booklet would be an important first step. The booklet could include information about common health concerns that new mothers face during the first six weeks after giving birth. It could also give mothers information about the postpartum visit, offer suggestions about how to prepare for the visit, and encourage all women to ask for what they need at that visit. The postpartum visit booklet could easily be distributed to mothers by pediatricians at the 2-week well-baby visit. It could also be mailed to women with the postpartum visit appointment reminder. Prenatal clinic staff could talk with mothers during their later visits about the importance of the postpartum visit and encourage them to come back to show them pictures of their baby (or bring their baby in). Further, with thoughtful preparation, it could be very cost effective to create new mother packets for the postpartum visit.

Timing and Sequence of Visits

- One informant suggested that the clinic should increase screening and visits for new mothers prior to 2 weeks. Many hospitalizations happen within those first two weeks. At this visit they could cover pain and pain management, infant feeding, perineum pain, hemorrhoids, bleeding, adequate rest, support at home, screening for depression, and provide the chance for mothers talk about some of the more uncomfortable and

embarrassing aspects of postpartum recovery. The six week visit could then cover depression again, adjusting, folic acid, and reproductive life planning.

- Another informant said that if she could make any change instantly to postpartum care at UNC, she would call all of their new mothers at one week postpartum. She felt that new mothers had a lot of worries about their bodies and their babies during that first week and were very vulnerable.
- Another idea was to provide a follow up well-woman visit at 3 months postpartum to check in on birth control and offer a general assessment. Mothers are more settled into their new post baby life style and more in tune with their feelings and infants at this time. This is a good opportunity to reinforce health messages. Medicaid coverage would need to be expanded to make sure this visit was available to all mothers.

Comment

These ideas underscore the interest in having more health care contacts with new mothers. While technically, calls could and should be made to mothers at the first and/or second week postpartum, the reality of reimbursement for this care makes this difficult to effect. The same is true with a visit at 3 months. The informant suggestions echo calls made by Lu and colleagues that new mothers have three visits postpartum – 2 weeks, 3 months and 6 months(17) The ability to influence reimbursement policy is essential to improve postpartum care for women. This might, however, be outside the scope of realistic changes that UNC could be made to improve the postpartum visit at present.

Services Offered - Group Care & Classes

- One informant suggested starting group education before mothers are discharged from the hospital. She suggested an in-patient postpartum class for new mothers. All

new mothers could be together and learn about early infant care and health issues.

The informant felt that there is a lot of camaraderie at this point and many women might enjoy the group and showing off their babies. This could streamline and improve patient education. In particular, this might help the staff better serve mothers who speak Spanish by insuring that they receive a wealth of information that is linguistically appropriate. It also might serve as a stress reliever by allowing them time to be together and share information with each other about their experience. This opportunity could also be used to highlight the importance of the postpartum visit.

- Several informants thought that offering Centering Pregnancy with a focus on extending the service into the postpartum period would be a good way to improve care. This could work well for the resident clinic based on the way those clinics are scheduled. The major issues around implementation would be finding a large, open and comfortable space for 20 people near the clinic. People tend to be isolated and this model of care allows them to get good information from each other and be part of a community.
- It was suggested that postpartum patients in the resident clinic have their appointments scheduled for the same one or two mornings or afternoons a week. This would bring groups of new mothers to the clinic at the same time and perhaps facilitate increased distribution of postpartum materials and group classes. The clinic could post pictures of the new babies on a wall as another way to make these mothers feel included and have a chance to show off their babies.
- One informant suggested that the clinic start a postpartum group giving mothers the chance to opt in at 2 weeks. Topics that could be covered in a postpartum group could

- include: parenting, birth spacing, going back to work, breastfeeding, nutrition, and exercise. The group would start at two weeks postpartum and meet for 6 months.
- Another group related suggestion was to provide a family planning class to educate women about methods and contingency plans. This could provide increased access to counseling about methods and better prepare women for requesting the contraceptive method that suits them best.
 - The addition of a birth to three-month new mother class was suggested as well as an infant massage class. Both of these classes could incorporate postpartum health messages for mom. Another idea was to start a lay led new mother support group. Health care providers could come down for specific topics as needed but the club could be by mothers for mothers. The class could also work as a book club for new moms.
 - Monthly or quarterly childbirth class reunions were suggested as a great way to provide postpartum information as well as to evaluate the childbirth classes themselves.
 - Since postpartum weight loss is such a common concern for new mothers, it was suggested that the Women's Health Information Center could offer a Weight Watcher program for new mothers. They already offer the Weight Watcher program to employees and it has been very successful. In order to make such a class happen, they would need a facilitator and a minimum of 20 people. Since women need to pay up front, ideas to get around it would be to secure funding and then pay half the fee or fund the whole thing and then women pay \$10 per visit. There could also be an incentive for finishing the class such as receiving half the price back at the end.

Comment

It was impressive to see how quickly the various key informants offered ideas about classes and groups. Some of the ideas were very innovative and others so logical that it was surprising they weren't already in place. A number of respondents noted that they hadn't ever given much thought to the postpartum visit or to the care they offered new mothers. When they did think about it, they actually had quite a few ideas. Of the suggestions listed above, the addition of quarterly childbirth reunion classes appears to be the easiest to institute while the move to Centering Pregnancy and a new system for educating mothers in-patient would take greater effort.

It is likely that the women who would participate in new classes on contraceptives, infant massage, and book reviews would be the same group who had also attended classes while they were pregnant. This would serve a specific, more local population with potentially a number of older first time mothers. Class attendance would be more difficult for women who did not have control of their transportation and who lived a distance from UNC. Additional funds would be needed to support all of the classes and groups, although the costs would be relatively small for one-time group sessions on specific topics for local mothers. Leadership for the classes would need to come from the Women's Health Information Center Advisory group and be supported by clinic leadership. Leadership for Centering Pregnancy would need to come from hospital and clinic administration. The UNC Family Medicine Practice has used the Centering PregnancyTM model with great success and could possibly serve as a consultant if this were a direction the clinic chose to go. Centering PregnancyTM might be particularly helpful for mothers receiving care in the resident clinic as it would provide them a feeling of continuity of care regardless of the rotation of the physicians. It

might also improve the care offered to Hispanics by providing services that are linguistically appropriate and creating opportunities for community building.

Services Provided - Content of Care

- There were a number of additional services that informants said they would like to see added to the clinic. Smoking cessation services were suggested by one person. Other informants wanted to see the addition of weight management and exercise programs. One suggested that providers should begin talking with mothers in early pregnancy about appropriate weight gain and exercise. Intake should be monitored carefully so mothers don't end up with significant amounts of postpartum weight to lose. A nutritionist could work with pregnant and new mothers to this effect.
- Since low-income women who have Medicaid for Pregnant Women can receive comprehensive health care during pregnancy, it was suggested that providers begin to address maternal health conditions proactively during pregnancy for these women in particular. For example, if a woman is diagnosed with lupus, she should be connected with an appropriate provider at that time and then followed by that provider in the first two months postpartum while she still has coverage.
- It was suggested that providers should highlight sleep, stress management techniques, healthy eating, and the importance of getting outside every day. These are important ways to reduce the risk for postpartum depression and should be taught to mothers both prenatally and in postpartum classes.

Comment

A number of informants said that they wished they could have access to a nutritionist in the clinic. This may reflect both an acknowledgement of the science behind weight

control and nutrition, and the need for additional human resources within the clinic.

However, without some changes in reimbursement policies, it will be a challenge to UNC to find a revenue source to support this position. One possible way to incorporate this service might be through a research grant or project on this topic.

Recognizing that pregnancy may be the only time that some women of reproductive age have broad health care insurance, it seems that all providers in the obstetric program should be proactive in securing as many services as possible for this population of women. This also is an opportunity to help women build links to needed follow up care and prepare to take advantage of this important window of time. A potential barrier for this effort might be that some providers who care for chronic diseases and conditions are uncomfortable taking care of a patient who is pregnant. They tend to want to shift this responsibility to maternal fetal medicine specialists. So this might provide an opportunity for obstetric providers to dialogue with other specialists and create shared care plans for high-risk patients.

Provider Support & Training

- Increasing education about lactation among nurses was suggested so staff can better handle the general needs of patients. This would reserve the lactation specialists for the more complex cases. It was also suggested that providers – especially residents and fellows – needed additional education about breastfeeding. There are many gaps in knowledge about breastfeeding among these providers as evidenced by some of their postpartum counseling in-patient per this informant.
- Other key informants suggested that nurses in the prenatal clinic should have more autonomy and should be involved in taking histories, screening patients, and providing education during prenatal and postpartum visits. The physician's time

could then be used to meet the patient's specific needs for that visit. This would allow for more teaching time for mom and more time for her concerns to be addressed. This care could be facilitated even more if clinic protocols were in place that would allow staff to order indicated postpartum screening tests. One informant gave the example that the mother with gestational diabetes could be counseled prenatally about re screening and given the sugar drink to consume before her postpartum visit.

- Three informants mentioned that an electronic prenatal medical record was being developed for the clinic. This record would have a problem list that would be easy to review. This list would be populated over the course of prenatal care. The design of the record would make it easy for providers to determine what care the woman needed at the postpartum visit. It could also have built in decision-making tools to make sure that providers, particularly those with less training, did not neglect key tests.

Comment

Over the course of the informant interviews, a number of respondents suggested that the postpartum visit did not have to be provided by a physician. Other providers with different expertise and time were thought to be able to provide good care for this visit. The use of electronic records with decision-making support tools would offer strong support to providers and address the many communication concerns raised over the course of the interviews.

Communication

- The development of a number of different educational items was suggested. These include a brochure to better explain about genetic counseling and why it can be

valuable prior to conception and a pamphlet about the postpartum visit and why it is important.

- Increasing the visibility and connectivity of notes, particularly for genetic counselors, in-patient nurses, and the Center for Maternal and Infant Health were suggested. For example, it would be helpful if the in-patient nurses could create an electronic “concern” list, which could then be viewed soon after hospital discharge by nurses in the out-patient clinic. An electronic medical record could have a problem list that would roll over and trigger providers to address various issues with the patient.
- One informant suggested that patients should complete a form that states where they will be getting their contraceptive care in the future. This could assure the clinic that the women do have a follow up plan and would allow them to better transmit pertinent information to that provider if needed.

Comment

These ideas continue with an underlying theme of this data set – the need to facilitate better sharing of information among providers and with patients. The electronic medical record was mentioned again as a way to address communication challenges. Talking with mothers to find out where they plan to get their care after the postpartum visit is a very important part of offering services that transition a woman to wellness care. Faxing a note to the mother’s new clinic would be a very cost effective.

Aim 5b: Elements Required to Address Gaps and Promote Change

Three informants highlighted the need for accountability and leadership in order to bring change to the clinic on this issue. Interestingly, a specific individual or position was not named as far as who should bear responsibility. Rather, it seemed that someone needed to

emerge who felt that this was an important issue that deserved attention. This reflects some of the culture within the obstetrical program where resident and fellow research and projects are supported and encouraged as learning opportunities. Among the providers in clinic, many have developed clear areas of interest and research. As such, they may assume leadership roles around these particular topics. This creates a climate where there is the opportunity for leadership based on interest and expertise. For example, it would be acceptable for a resident or faculty member with a keen interest in gestational diabetes to take a leadership role in a gestational diabetes re screening quality improvement project.

Other informants noted that quality improvement initiatives may work well in the short term, but there is a need for the indoctrination of new practices for all providers – old and new. Again, it was not clear who bears this responsibility. One informant stressed that the long-term maintenance of new initiatives really must remain a focus if any change is to be implemented. Overall, there was an interest among key informants around doing more quality improvement. Possible improvement topics included: postpartum visit utilization, the content of the postpartum visit, patient pregnancy intervals, and whether or not high-risk women received appropriate health interventions at this visit.

Administrators highlighted that if one of the previously mentioned quality improvement initiatives suggest the need to add or modify services in the postpartum clinic, there would be a number of steps to take before this could happen. One informant noted that administrator work is driven by productivity and finance, not content of care. Providers can come up with a list of services they want to offer. Administrators then must study the issue to see if there is revenue potential or at least a way to break even. If it comes to a point where

the clinicians want a new service that will cost the department money over time, the Chairman of the Department becomes the final answer.

Several informants referenced a quality improvement group that meets regularly and focuses on quality improvement indicators for perinatal and neonatal medicine. Interestingly, these same informants all assumed that someone else from the clinic was a member of the group when in truth none of them were. Further exploration found that this particular group focused only on in-patient indicators. This was both a gap but also a potential mechanism for change. One informant suggested that safety rounds in obstetrics is a time when there is a lot of discussion about-patient referrals and processes for being sure local doctors know what to do with their patients when they return to their local clinic. Two informants suggested that tracking clinic utilization by resource code and medical record could give the OB/GYN department the opportunity to picture how women do or do not stay in the UNC system across their reproductive life cycle.

Focusing on helping mothers connect with local health departments and resources was an idea offered by three informants. There are 16 health departments and community clinics that refer patients to UNC for high-risk care and delivery. While these clinics have different levels of resources, almost all of them provided services that are important to mothers and infants. They also work hard to provide services that are linguistically appropriate. Several informants thought that many of the resident patients should receive care from these clinics than at UNC. There is not a process built into the postpartum visit, however, that would provide mothers with information about her local health department and the resources available there.

Comment

The number of different referrals to quality improvement initiatives made by key informants suggests that this language and concept is becoming more familiar to many different stakeholders at UNC. It also suggests that taking time to focus on one particular aspect of postpartum care would be a potentially good approach to incrementally making change in the system at UNC. Completing the cycle of care for high-risk low income patients by providing them with a warm hand off back to a local health department or community clinic seems to be essential to the visit's ability to transition a woman to wellness care.

Examples of Good Practice

Over the course of the interviews, several informants discussed programs at UNC and beyond that they held up as examples of programs that were providing good care to new mothers. The case management services provided by the Center for Maternal and Infant Health and the UNC Horizon clinic were mentioned as good models for providing improved care to high-risk mothers. These programs develop strong relationships with mothers during pregnancy and remain available to them through six weeks postpartum, longer in some cases. These programs serve as intermediaries between the women and health care services, often helping them make appointments and facilitating their ability to get to those appointments.

The UNC Sickle Cell program was mentioned for the good job they do in counseling their patients about the risks that pregnancy holds for them. Dr. Alexander at UNC directs a clinic for children with brain and spinal cord injuries. He consistently counsels mothers of infants with neural tube defects about the importance of daily folic acid consumption and the needs for increased consumption for this population prior to a subsequent pregnancy.

Many informants expressed satisfaction with the availability of a psychiatric nurse in the obstetric clinic. They felt that the addition of routine screening for depression in the prenatal clinic using the Edinburgh tool was well received because the providers had a resource available to them to care for women who screened positive. The women were more likely to accept a referral to psychiatry when the visit took place in the prenatal clinic – not in the Psychiatry Department. The increased attention to postpartum depression addresses a major problem for new mothers. Informants also noted that the process of rolling out this initiative also went well. Introducing the new protocol to the clinic was not difficult. The staff who took a leadership role in promoting this change created a direction for what was to be done, trained everyone involved, provided tools to make it easy, and were clear as to what to do if a patient screened positive. They engaged nurses and the heads of the various divisions throughout the process. They had “buy in” from key stakeholders before they began the process.

A few key informants stressed that for low-income women and women with high-risk social and behavior issues, the best care is that provided by a local health department. Health departments provide transportation and offer care coordination for mothers with Medicaid. Many still provide home visits to new mothers in the first few weeks postpartum. Local health departments also offer a variety of wrap around support services for the mother and the baby. For example, Orange and Chatham counties offer in home breastfeeding programs and home visits within 72 hours through WIC. They provide WIC, well-baby care, and family planning services to name a few. One informant wondered if it would be better for some women if UNC were to refer them back to care in their own community or at least give them information about the services available to them locally.

Comment

The implementation of the Edinburgh screening tool along with the introduction of a psychiatric nurse into the clinic represents a model of system change that works well at UNC. The success of this model should be taken into consideration when planning new additions or changes to clinic and services. This section echoed comments described in the previous section that it is important to assist women in finding a medical home or primary care provider at the completion of her pregnancy. This is a conversation that should be had with all women, regardless of their insurance status. For women who are likely to use their Medicaid coverage, health departments and community clinics offer important safety nets for core services such as family planning. The UNC prenatal clinics have traditionally supported good communication with their 16 outlying clinics around referrals for high-risk care, ultrasounds, and labor and delivery. This final conversation and movement of patients to local care seems to be a logical extension of this relationship.

Role and Perceptions of Postpartum Care for New Mothers at UNC

Questions that inquired about the opinions of key informants about the postpartum visit and the care for new mothers in general prompted many interesting and even passionate responses. One informant stated that, “the UNC paradigm is totally clinician centered. Appointments are automated and visits aren’t driven by women’s needs.” Another informant said that, “For new mothers, UNC now considers their work with her complete at 6-weeks postpartum. There are not specific efforts to link her into the system for further and ongoing care. This mentality however ignores issues such as readmissions for mothers 6-8 months later for issues such as endometritis infection, wound infection, swelling, clots, and so forth. Other providers see a number of postpartum concerns as obstetric issues and want to pass

women back.” Along the conversation about provider responsibility for integrated care, one informant noted that young women see only their OB/GYN for care so it is OB/GYN’s responsibility to be prepared to address women’s health needs more broadly. While a number of comments in the various interviews suggested that residents were challenged in providing continuity of care, one informant felt that residents did understand that for many of their patients this was the last health care visit she would have for a while. She noted that, “they provide contingency care as best they can. They want to help women be healthier and do see prenatal care as an opportunity to catch health problems. The challenge is having the resources to fully be able to make this a reality.”

The issue of integrated care for women came up several different times in the various interviews. Two informants noted that currently the UNC healthcare system is looking at the overall women’s health care being offered and making a business decision as to whether to offer full service wellness or not. They know that women drive healthcare choices and are contemplating about how to keep them in the system. They are also thinking about whether or not they want to keep them in the system.

On a different topic, one informant felt that “there is a lot of work to be done to change the context and underlying assumption about how and why things are done during this visit.” One informant saw the postpartum visit as a gateway into a woman’s life and suggested that providers do not take advantage of this opportunity. She also noted that nurses have a very important role to play and that there is an intimacy in nursing that can respond to women during vulnerable moments. One informant noted that the postpartum visit is a way to bring women into a practice for well-woman care. She suggested that about 60% of the prenatal patients continue their well-woman care with their division. She also suggested that

it was important for providers not to “step over” issues that they sensed were present but didn’t have time to address. Another informant felt there was a need to change the current paradigm and shift more focus to the mother and women’s wellness.

Some informants felt that the timing of the 6-week visit was appropriate. Others noted that the 6-week visit was purely a convenience time frame and measure and that there was no real clinical evidence for the timing of that visit. One felt that patients rarely needed a physical exam at that visit unless they have conditions or a birth experience that require an exam. Others felt that 6-weeks was too late to address important health concerns for new mothers.

Finally, one key informant suggested that other countries do much better than the United States at providing enhanced care to mothers during the first year postpartum. She stated that, “in the United States postpartum care is minimal to nothing. After a woman has a baby her provider ‘drops her like a hot potato.’” Another person suggested that it would be instructive to study the philosophy behind the countries that offered quality postpartum care to new mothers. Their specific system of care is not as important as the reasons why they consider postpartum care/ support for new mothers to be an important investment for their country.

Comment

The thoughts conveyed in this section of data demonstrated some of the passion some informants expressed about the way postpartum care is delivered to new mothers. There appears to be a need to realign the postpartum visit to be patient-centered rather than clinician-centered. There were also differences of opinion that emerged about the kind of services women needed at the postpartum visit and the timing of care for women after giving

birth. This is part of a larger, debate that is gaining ground regarding the content of the postpartum visit and the best way to initiate interconception care. Finally, as in most health care institutions, business is driving care at UNC. This is obvious in the services that are or are not available as well as the number of times billing and reimbursement are mentioned.

Discussion

The key informants were receptive to being interviewed for this study and seemed to be candid in their comments about the visit. Their voices were essential to this paper and represented a number of stakeholders at UNC. Informants revealed system and service gaps related to the delivery of the postpartum visit. At the same time that they offered information about challenges within the UNC system, there was also a willingness on the part of each informant to play his or her role in addressing those challenges. The remainder of this section describes a number of underlying themes that emerged from the interviews. It also highlights a number of ideas with the potential for being recommendations for improving the visit, helping it to truly serve mothers and transition them to well-woman care.

The first theme was the postpartum visit as an “after-thought”. Many of the informants said they hadn’t really given the visit much attention or consideration. When they did, they realized that there were some gaps in care and there was a lot of interest in finding ways to make the visit better. Interestingly, the process of conducting the key informant interviews created a new awareness of the gaps in postpartum care at UNC for the respondents. It also suggests that offering grand rounds on the postpartum visit, doing patient satisfaction surveys, tracking utilization rates, or conducting quality improvement initiatives could raise awareness about this visit and its prevention potential. The actual process of asking informants about this visit may ultimately be part of the change process. Respondents

who participated in this research may play a role in building a strong group of stakeholders for future change efforts.

Communication, or lack thereof, was another theme. The most obvious, and the most troubling communication problem was not having prenatal records at postpartum visits. The lack of information about the mother for this visit is a foundational flaw in UNC's delivery of care for this visit and beyond. Moving to an electronic prenatal medical record could address this problem, satisfying the hospital's need to process bills and the clinic's need to care for patients. It also could allow for easy access to essential, problem focused information about the patient for her visit. This could increase the likelihood that providers do not miss the opportunity to reinforce certain health messages or screen for potential problems. The electronic record could also facilitate communication among a variety of providers. It would also make it more cost effective to conduct quality improvement initiatives.

In addition to communication issues within the UNC system, informants also raised challenges around patient communication. They felt that new mothers needed more information about the postpartum visit. This information would not only help them prepare for the visit, it could begin to generate patient demand for adequate visits that meet all of their needs as new mothers and women. Informants also suggested that mothers should be receiving broader health messages about healthy eating, exercise, genetic counseling, postpartum depression, and the health care options available to them once they've completed their gestation cycle. Ideas for ways to improve this communication included the development and distribution of a postpartum visit booklet, the development and distribution of new mother packets for the postpartum visit, creating informational sheets about local health care resources for mothers, augmenting online information for new mothers, and

providing more classes for new mothers. A population particularly impacted by communication gaps is Hispanic women. It doesn't appear to be an issue as to whether or not the clinic wants to serve these mothers, rather a function of system issues that are not assigning enough resources to areas that would help improve this care. Consult lines, lactation support, and even some clinical encounters are not created or funded in a way to facilitate linguistically appropriate care. With over a third of the population in the clinic comprised of women who speak Spanish, this is a major challenge.

Improving services by addressing gaps in clinical care was another theme that was found in the data. This was particularly attractive for clinical, protocol driven topics such as gestational diabetes screening postpartum. Respondents had a number of ideas for potential areas of study. It also seemed that the clinic and department culture would be supportive of resident, fellow, or faculty leadership on such initiatives. The concept of quality improvement seemed to resonate with the informants, although several people also noted that such initiatives could be costly, time consuming, and pointless if resources weren't in place to facilitate needed change.

The interviews also brought forward threads of conversations around the differences in the care provided within the resident and faculty clinics. The differences are both a factor of the populations cared for by these clinics and the length of time the providers are privileged to spend with the mothers over the course of their pregnancy and even future pregnancies. Conversations also touched on the role of tertiary care centers in providing linkage back to local health care sites. There is a wealth of services available to low-income mothers in North Carolina through health departments. In some cases UNC has done well in creating access to this care, primarily by supporting the out posting of an MCC from Orange

County. In other areas they are much less informed about the services available and less proactive at linking their mothers with these resources. Dialogue around the overall continuum of care available to new mothers at UNC was also a part of the interview results. Respondents recognized the unmet health needs of their mothers and expressed a desire to have more contact with these women during this time of vulnerability. One informant keenly wished for the opportunity to call all of the mothers at one week postpartum when they were completely overwhelmed and had so many questions. Obvious service gaps such as counseling about weight loss and nutrition that were seen in the chart review were confirmed by the interviews. Frustration was expressed when there were clear service gaps and a desire to address them, but limited resources to connect the two.

Informants overall injected a dose of reality into many of their suggestions for areas of improvement, particularly around system barriers and limited resources. Questions about leadership, responsibility, and ownership for clinic enhancements and quality improvement, were answered indicating that there was not a particular person or position who should take action on this initiative. Rather, there seemed to be an openness for any faculty, resident and perhaps partner or clinic staff to take a leadership position on implementing one or all components of change.

CHAPTER SIX

HEALTH CARE PROVIDER SURVEY RESULTS

The health care provider survey sought to collect information directly from professionals who provide postpartum visit care at UNC. The survey was designed to address Research Aim 3: Describe the Attitude and Practice of UNC Providers with Regard to Postpartum Care. The second question in the survey also addressed Aim 4: Health Care Systems that Influence the Providers' Ability to Offer Integrated Care. Because the chart review had already provided a snap shot as to the standard components of postpartum care at UNC, the survey questions were designed to focus more on the providers' attitudes and perceived barriers to care. The survey was designed to be easy to complete with the demographic questions placed first. Everyone who took the survey completed all the questions. One provider opted out of the study. No emails were returned as undeliverable. The survey had a 63% response rate (n=32), a rate that was lower than hoped for but reasonable in light of the target population. The rate was skewed down by a low response by residents. While residents make up almost half of the obstetric care providers at UNC, they represented only 38% of respondents. The survey was conducted in the spring prior to graduation so the timing should not have confounded the response rate. The survey was sent by the resident program administrator and supported by a well-liked Chief Resident.

The information included in this chapter provides details about respondents' professional backgrounds as well as their response to the survey questions. The data is

reviewed as a whole as well as by provider background and years of training. Overall, the survey found that while providers agreed that the postpartum visit is important, they also agreed that there was room to improve their ability to transition women from pregnancy to well-woman care.

Provider Background

All of the Women's Primary Care Obstetricians and Fellows responded to the survey, as did all of the Maternal Fetal Medicine Specialists and Fellows. One third of the residents responded, as did half of the nurse midwives and the nurse practitioner. The providers had varying levels of experience, with 9% having been in practice for 11-15 years and 22% who had been in practice more than 16 years. Almost half of the respondents (44%) had not completed their training (residents and fellows).

Table 14: Description of Provider Background

Background	Responders	Non Responders	Percent of Total
Women's Primary Obstetrician	6 (100%)	0	19%
Women's Primary Fellow	2 (100%)	0	6%
Maternal Fetal Medicine Specialist	6 (100%)	0	19%
Maternal Fetal Medicine Fellow	3 (100%)	0	9.5%
OB/GYN Resident	9 (38%)	15 (62%)	28%
Certified Nurse Midwife	3 (50%)	3 (50%)	9.5%
Nurse Practitioner	1 (100%)	0	3%
Other	2 (100%)	1	6%
Total	32 (63%)	19 (37%)	100%

Table 15: Health Care Provider Years of Training

Background*	Not Done	1-3 yrs	6-10 yrs	11-15 yrs	16+ yrs
OB Primary Care	0	3	1	2	0
OB Primary Care Fellows	2	0	0	0	0
MFM	0	1	1	1	3
MFM Fellows	3	0	0	0	0
Resident	9	0	0	0	0
CNM	0	1	0	0	2
Nurse Practitioner	0	0	0	0	1
Other	0	0	1	0	1
Total	14 (44%)	5 (16%)	3 (9%)	3 (9%)	7 (22%)

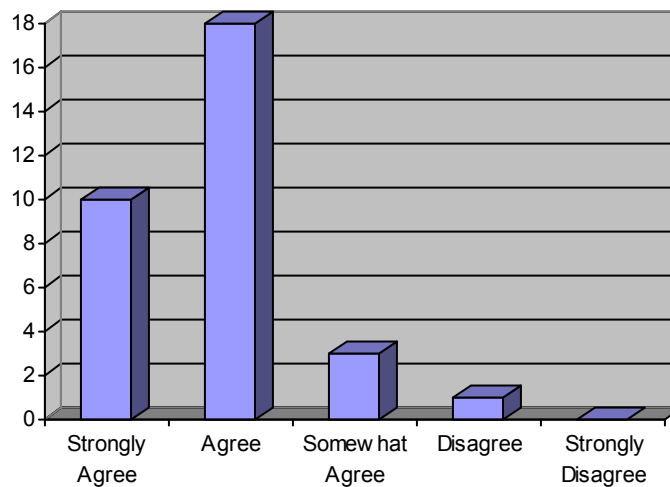
* None of the respondents selected the 4-5 year practice option.

Provider Responses

Respondents were asked to comment on the statement that, “A growing body of research has demonstrated that women have many unaddressed health needs in the weeks and months postpartum.” The vast majority of the respondents either strongly agreed (31%) or agreed (56%) with this statement. Among those who only somewhat agreed or disagreed (4), three of the providers were residents and one was a Maternal Fetal Medicine Specialist. The difference among providers groups between those who agreed and strongly disagreed was not significant. Looking at this response in light of years in practice showed that over half of those in practice 16 years or more strongly agreed with the statement. The largest range in answers was by the group of providers who had not yet completed their training, ranging from 29% who strongly agreed down to 21% who only somewhat agreed or disagreed. While a basic question, this established that there is at least a baseline understanding among most providers that women have unmet needs postpartum. It also suggests the potentially diverse experience level among those who have not yet completed their training and a need to provide this cohort with some additional information about current research on this topic. It

also sets the foundation upon which future arguments might rest – if the majority of providers agree that mothers have unmet needs, might suggest that the majority also should have some interest in discussing better ways to meet those needs.

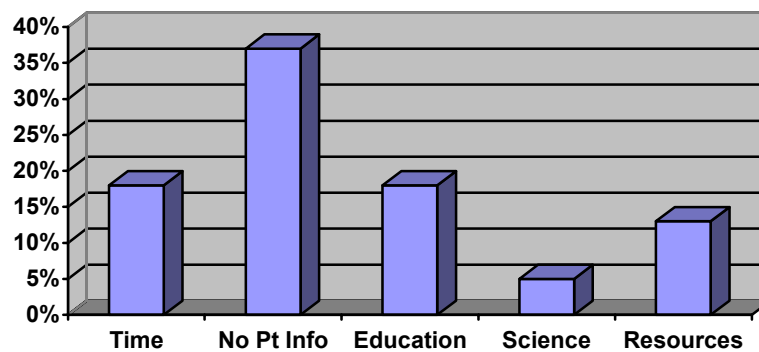
Figure 5: Responses to Statement about Postpartum Unaddressed Needs



The next question asked why providers do not consistently offer follow up screening for conditions such as gestational diabetes, anemia and hypertension. While the directions said to check only one answer, several respondents checked more than one response. A large percentage of the respondents (37%) felt that inadequate information about the patient at the time of the visit was the primary reason for this neglect. Not enough time during the visit (18%), provider lack of information/awareness about screening protocol (18%), inadequate resources in the clinic (13%), and being unconvinced of the science for follow up (5%) were the next most common reasons selected. Three respondents checked the “other” option but didn’t list their reason. Almost all of the provider groups had respondents who listed that time and information about the patient were the reasons for not providing consistent follow up care. Residents in particular cited lack of time and information as their primary issues. Interestingly, six of the providers who had completed their training, said that the reason was

being uninformed of the screening criteria. This question affirms findings from other data sources in this thesis that the lack of knowledge of providers is a key factor in compromising adequate postpartum follow up. This suggests that there is a need to provide ongoing information about screening recommendations and to be sure that all providers, not just residents, are clearly informed of clinic protocol and procedures around follow up screening. Time constraints were also mentioned as a challenge by key informants and clearly reiterated here.

Figure 6: Responses as to Gaps in Follow Up Screening

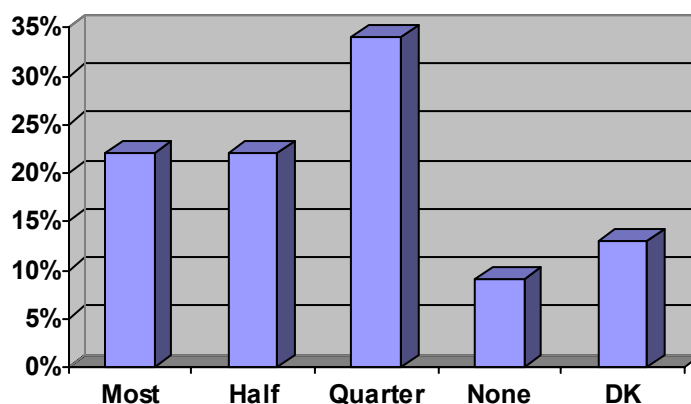


The next series of questions look at continuity of care and access to additional services for the mothers served by the respondents. First, the respondents were asked their opinion about how many of their patients considered them to be their primary provider. Twenty two percent of the providers felt that most of their patients considered them as their primary health care provider. An additional 22% of respondents stated that they functioned as a primary care provider for about half of their patients. A full 34% of providers felt that at least a quarter of their patients considered them as their primary care provider. Three providers didn't believe they functioned as primary provider for any of their patients and 12% did not know. Among those who said that they were not functioning as primary providers, were two maternal fetal medicine specialists (MFM) and one "other" category

respondent (likely a genetic counselor). Further, two maternal fetal medicine specialists, one maternal fetal medicine fellow, and one OB primary care provider stated that they did not know if their patients considered them a primary provider or not. Based on these responses, 78% of the providers at UNC who responded to the survey acknowledged that they are considered to be a primary care provider for at least a quarter of their patients. All of the residents responded that at least some of their patients considered them as their primary care providers. The nurse practitioner and nurse midwives also noted that 50% or more of their patients considered them to be their primary care providers. The higher number of maternal fetal medicine specialists who did not note that they serve as primary providers was expected. MFM training is focused on treating complex, high-risk pregnant women and fetuses.

The responses to this particular question are important as they underscore the role that these providers play in the overall health of the women whom they serve, during and in between pregnancies. It may also reflect the tension between obstetricians' differing perceptions of their training and role in primary care that was found in the literature review. Among respondents, nurse midwives, the nurse practitioner, and residents were more likely to say they provided primary care than the other survey participants. Providers in Women's Primary Care were understandably more likely to say they provided primary care than Maternal Fetal Medicine Specialists. Residents in particular, care for a large cohort of women who are more likely to be uninsured, single, and from a minority group than other women. Their patients may not have any other perceived option for primary care outside of their obstetrical care provider.

Figure 7: OB/GYNs Perceptions as Primary Care Providers for their Patients



In light of the many and diverse needs expressed by mothers postpartum as well as the chronic conditions or risk thereof that may be discovered during pregnancy, it seems likely that obstetricians and other maternity care providers would be prepared to refer their patients for additional services. As such, providers were asked how often they refer their patients for additional resources or to other providers and specialists. Eighty-five percent of the providers reported referring a quarter or less of their patients for additional care. Among this group, almost half reported referring fewer than 20% of their patients. This statistic suggests that these providers feel confident in meeting most of their patients' needs. The provider group the least likely to refer patients to other providers was OB Primary Care group. On the other hand, MFMs were the most likely to refer with three respondents referring over half their patients. As mentioned previously, MFMs tend to see high acuity patients only during pregnancy. Residents were more likely to refer women than providers with more experience.

A final question in this series was asked to determine how confident the respondents felt that their patients were following up on the referrals they made. Only one OB Primary Care Group provider and two CNMs said that they were very confident that their patients

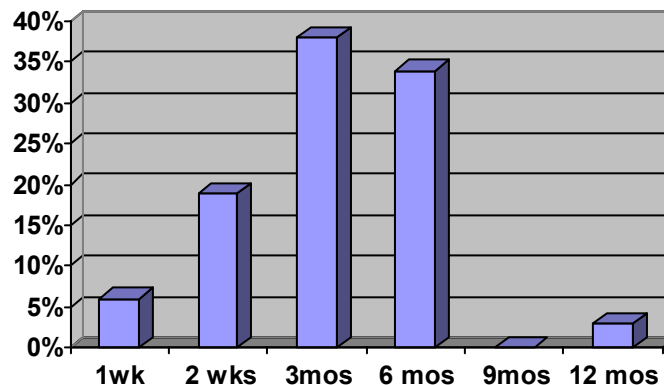
received the needed follow up services. Sixty percent of the respondents were only somewhat confident that their patients received follow up care and 31% were not confident. This confidence in the patients' ability to follow up may influence provider behavior in making referrals. It also highlights time constraints on the part of the clinic that may not allow them to follow up on the referrals as well as some continuity of care issues. While the postpartum visit is often viewed as the end of pregnancy, it is in fact the starting point for the woman's next phase in her reproductive cycle. Thought should be given with regard to her medical home and the place where she will receive the health care best suited to her needs. In the case of some low-income mothers, public health clinics may be able to provide a wider range of services to certain groups of mothers over time than the UNC Obstetric Program. Other mothers may need to receive specialty care for health conditions, for substance use, or other services to address psychosocial issues. These questions highlight that there are many maternity care providers at UNC serving as primary care providers, who do not refer many of their patients, and when they do, they do so without confidence that care will be received.

An article published by Lu and colleagues offers a new model for improved interconception care. In this model, additional postpartum visits are proposed – a visit at 2 weeks postpartum, 6-8 weeks postpartum, and then at 6 months postpartum. The premise is that mothers have many needs during this time and that additional visits would allow clinicians the opportunity to address more needs within a timeframe that is matched to those needs.(17) For example, an earlier visit at 2 weeks postpartum would focus on issues such as breastfeeding and maternal and infant bonding. A later visit at 6 months might be a better time to support mothers' questions regarding weight loss and exercise. All encounters could

support mothers' reproductive life plans through appropriately matched contraceptive methods.

With this paper in mind, providers were asked about the timing they would prefer should it be possible for them to see all new mothers an additional reimbursed time after the birth of their baby. Many of the providers (38%) said that the best timing for an additional visit would be at 3 months postpartum. This was closely followed by responses from providers who wanted an additional visit at 6 months postpartum (34%). Nineteen percent (6) of the respondents preferred that women receive an additional visit two weeks postpartum. The responses were similar across provider backgrounds and years of experience. These results point to a potential interest among providers for an increase in later visits rather than additional early postpartum visits. The timing of additional visits is an important area for future study.

Figure 8: Timing of One Additional Reimbursed Visit



The data from the chart review and the key informants suggest that providers could use additional resources to help them meet the needs of new mothers. The data on the content of care provided at the postpartum visit indicated that mothers were not currently receiving

much information about weight loss and nutrition, maternal/infant bonding issues, vitamin supplementation, family issues, substance use, and the return to sexual activity postpartum. Key informants suggested that mothers needed more information about nutrition, tobacco use, family planning, adjusting to life with a new baby, work/life balance, and breastfeeding. The survey question described below was asked to learn from providers what new services they felt would be the most useful to them in their practice.

The survey gave providers the option to check the two new resources they would most like to have available to their patients through their clinic. Increased access to family planning follow up and postpartum weight loss/healthy eating services received the most responses. Comparing these responses to data collected in the chart review, it is interesting that the service components that faculty and residents provided most frequently, family planning was also identified as a valuable new resource. This suggests that providers may believe that more time and attention is needed to work with mothers on finding a method likely to be most effective in meeting their reproductive life plans. At a minimum, it suggests that one of the services provided most consistently still has potential quality gaps in its delivery at UNC. The providers' acknowledgement that additional services were needed for weight loss and healthy eating, suggests that providers are aware that their patients need this information, but may not have the time nor training to offer it to them. The number of providers who would like smoking cessation services, support for new mothers as they adjust to parenthood, and work/life balance suggests that the respondents are aware of the multiple needs of new mothers. That fact that 19% of the respondents wanted additional services for breastfeeding mothers, affirms the comments made by one of the key informants who noted that the UNC lactation program is currently stretched to serve a large number of patients with

fairly limited staff. There was not significant variability in the kinds of services requested based on years of experience or provider background. Increasing the amount of services and resources available on all of these topics may be one way to support providers in augmenting the content of care given at the postpartum visit.

Table 16: New Services Requested for Postpartum Patients

Service	Percent	Count
Family Planning Follow Up	53%	17
Postpartum Weight Loss / Healthy Eating	47%	15
Smoking Cessation / Recidivism Prevention	25%	8
Adjusting to Life with a New Baby	22%	7
Breastfeeding	19%	6
Work/Family Balance	13%	4
Fatigue/Headache/Backache Reduction	3%	1
Other	9%	3

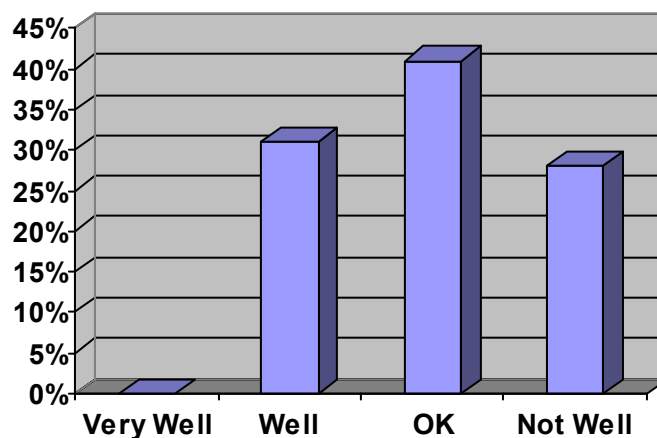
Finally, providers were asked to respond to a final quote about the postpartum visit, “The postpartum visit has been described as one that provides an important opportunity to assess the physical and psychosocial well-being of the mothers, counsel her on infant care and family planning, and detect and give appropriate referrals for preexisting or developing chronic conditions such as diabetes, hypertension or obesity. It is the gateway to well-woman care.” They were asked how well UNC clinic postpartum services matched this description. No one believed the clinic was doing “very well.” Thirty-one percent of the respondents felt UNC was doing “well.” Almost half (41%) believed the clinic was doing “ok”. Over a quarter of the respondents (28%) felt that UNC was not doing well in providing this care to new mothers. There was a lot of variability in the responses to this question.

Based on provider background, residents (56%) and OB Primary Care providers (62%) were the most likely to say that the UNC services fit this profile well. The providers who thought UNC was not doing well included two of the three nurse midwives, the nurse practitioner, nurse, and one maternal fetal medicine specialist. When the data was reviewed

by length of time in practice, those who were not done with their studies or who had only been working between 1-3 years were the most likely to say UNC was doing well with this visit (50%). On the other hand, those with 11 or more years of experience were more likely to say that UNC was not doing well (60%).

This question highlights a disconnect within the UNC OB program in believing that women have many unmet needs postpartum and being able to provide postpartum care that is effectively able to meet those needs. The responses to this question open the door for further discussion and work toward improving the care offered to new mothers at this visit at UNC.

Figure 9: UNC Clinic Postpartum Visit Performance as “Gateway to Well-woman Care”



At the end of the survey respondents were invited to share their ideas for improving postpartum care at UNC. Forty-one percent of the providers (13) took the time to offer their thoughts on this care. Several themes emerged from the responses. The first was the need to improve the availability of information about the patient at the time of the visit (23%). As one provider stated, *“We have NOTHING that lets us look at what was discussed with the patient during her pregnancy. Any problems that are not listed in the delivery note may go unaddressed during the PP visit as the provider is unlikely to know they exist. Since the provider who does the PP visit is almost always someone who did not see the patient much*

during the pregnancy, it is tough to know if there are any special concerns that we should know about with this patient.” Another noted that, “I mostly hate doing postpartum exams unless I know a patient very well.”

The second theme was the potential for improving services for mothers by using non-physician health care providers during the visit. Four providers (31%) suggested that patients would be better served by other health care providers such as nutritionists and nurse practitioners who could take more time to counsel and teach patients on topics such as nutrition, breastfeeding, adjusting to the stresses of parenting and so forth. One suggested that they could build a system like they have for the first prenatal “new to nurse” visit where a variety of concerns could be addressed. Another suggested that a non-physician provider could offer a longer visit – *“almost like an entire postpartum clinic.”* In a related response, one provider said, *“we need more help such that we don’t have so many patients to see in our own clinics.”* Another noted, *“We have a backlog of 6-8 weeks to get a GYN visit so a diabetic check on a non-pregnant patient is not what we want or have time to do.”*

Three providers suggested that more follow up closer to delivery would be good. Of these, two thought that working with home health to provide new mothers with a visit at 1 to 2 weeks postpartum would be ideal. Two other providers suggested that it would be helpful if women received more proactive education and counseling about family planning and other postpartum issues during pregnancy and in the hospital. One provider suggested that there should be more consistent messages among layers of providers and that special screenings at pediatric offices should be put in place (depression, cardiomyopathy, etc). Another provider noted, *“It is difficult to screen for GDM at this visit because patients don’t come in fasting.”* Finally, one provider noted, *“At UNC our system is NOT set up for us to be the primary care*

doctor for our patients. We see the postpartum check as an opportunity to do an exam (pap esp.), address depression, address contraception, and then refer out all other needs. I think we could all easily address one's hypertension or diabetes, but none of us are willing to be their follow up/primary physicians." Finally, one provider clearly saw the importance of the postpartum visit and noted that it was important to *"educate providers to see it as a gateway to the future health of our nation."* The open comments offered a variety of thoughts and ideas about the postpartum visit. Concerns about having adequate patient information and enough time were expressed. Utilizing other health care providers such as nutritionists, nurses, and nurse practitioners was suggested as another way to improve care. Several providers suggested more contact with mothers prior to the postpartum visit. A need for additional education and consistent messages among providers form mothers and infants were suggested. The tension around the role of obstetricians in primary care surfaced again in these comments.

Discussion

Several themes were identified through the provider survey responses. When considered alongside the data gleaned from the chart reviews and informant interviews, these themes emerge even more strongly. The first is the issue of the effective communication of health information. Responses to survey question two, which inquired as to why needed screenings were not accomplished, along with some of the open-ended comments, amplify the serious problem of inadequate communication at UNC. Providers of all backgrounds and years of experience commented that the lack of information about the patient at the time of the visit is a main reason why appropriate screenings are not done. In light of the time constraints mentioned in the data, limited patient information combined with limited time is a

potent recipe for neglect. This seems to be a fundamental problem that must be addressed if UNC is to improve its ability to effectively transition its prenatal patients into well-woman care.

The survey responses to the first and last questions echo comments made by key informants. Indeed, there does seem to be an understanding at UNC that new mothers have a host of unmet needs. The vast majority of providers agreed that this was true. A number of key informants identified specific maternal needs based on their specialty of care as well as more general needs for all mothers. Combined, this suggests that there is a foundation of agreement that there are service gaps in the provision of care to new mothers. The chart review data affirmed that indeed there are many women who are not receiving a full compliment of services that are basic to the care of new mothers. Further, the survey clearly determined that the majority of providers believe UNC is doing no more than “okay” at addressing these needs. Recognizing that there is a need and a problem in providing care to meet that need is fundamental for change. All study components found this to be true.

Another very important theme focused on the role of obstetricians and other maternity-focused clinicians on the provision of primary care to women. Forty-four percent of the providers felt that half to all of their patients considered them to be their primary care provider. No provider felt confident that the referrals they made were followed up on. As such, it seems likely that some UNC providers in the Obstetric Program are serving as primary care providers to a very diverse and often high-risk population. And, in the cases where a referral is made, they have moderate to low confidence that the referral is ever completed. Several respondents who took the time to answer the open ended question highlighted this challenging situation by expressing frustration about having to serve as

primary care providers and/or being unable to do so due to the heavy demands on their schedules in clinic. This ambiguity seems to reflect current conversations in obstetrics around its role in primary care. It may also reflect the voices of maternal fetal medicine specialists, fellows and some residents in an academic medical center who have studied specifically to provide tertiary, episodic care to high-risk women. These voices may or may not blend well with those of nurse practitioners, nurse midwives, and OB/GYN generalists who have studied to care for women across a broader wellness spectrum.

The tension reflected in these comments is a struggle at UNC, a state institution obligated to provide care for all. Dialogue about these various opinions about primary care within the OB/GYN Department must be fostered, especially since postpartum visits are basically primary care for women. This challenge is further confounded by ambiguity on the part of providers and health care system administration as to their long-term strategy in providing integrated women's care. As revealed in the key informant data, adequate information is not currently available about how many women who received prenatal care services at UNC continue to receive care at UNC. Nor is information available about the flow of patients between clinics, including GYN, family planning, psychiatry, and specialty care for patients with chronic disease. In the midst of this gray zone are women who are clearly relying on OB Program clinicians for their ongoing health care. Until there is a better understanding of care pathways for new mothers, some women will continue to receive the continuity of care and service they need and others will not. Within this equation, it is likely that the low-income, high-need patient population that depends on residents for care will come up short.

Two additional segments of information were also collected by the survey. The first was a sense as to the kinds of services providers would like to see added to the clinic for new mothers. Family planning follow up and weight loss/nutrition education were the top two responses. What is interesting about these two particular choices is that they reflect one service that is currently offered to over 75% of women during the visit as well as a service currently offered to only 7% of the women. In the first case, family planning, this choice of services may denote that providers recognize that this is an important topic to be addressed at this visit, and one that perhaps could warrant even more attention than it is currently given. The choice of weight loss and nutrition services may reflect the importance of this service as well. Based on the results of the chart review and interviews, it also mirrors the lack of such care currently provided within the clinic at this time. In looking ahead to service improvements, it would make sense to begin to augment services based on provider requests for assistance and resources given that they also agree with the larger literature and other professional recommendations.

Overall, the information collected through the provider survey underscored data about providers uncovered in the literature review and key informant interviews. Improvements in the postpartum visit will need to: offer additional educational resources for patients and providers; address communication gaps, particularly around patient information at the visit; take into account providers' opinions about mothers' unmet needs and the clinic ability to meet those needs; and consider the tension in obstetric provider role in primary care. The survey results suggest that some providers might agree with the study's premise that there are modifications that could be made at UNC to improve the capacity of the postpartum visit to promote preventive services.

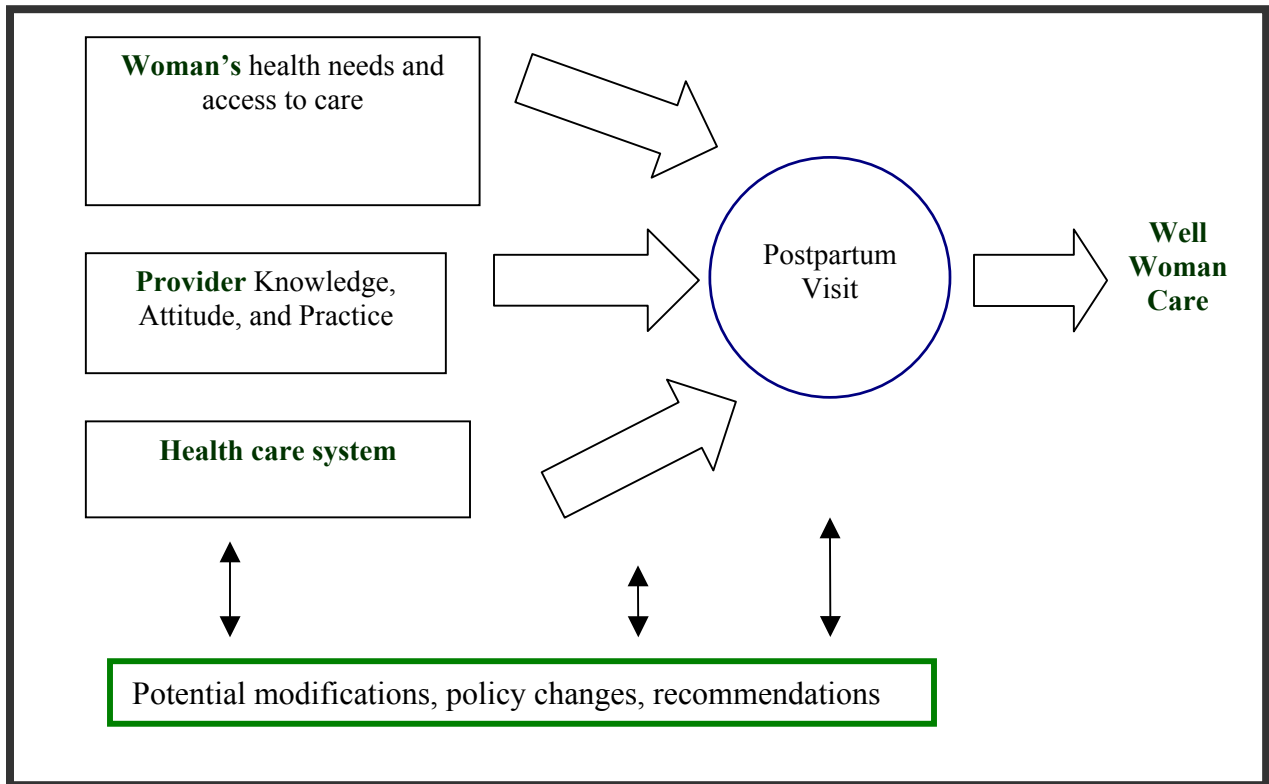
CHAPTER SEVEN

DATA SYNTHESIS, DISCUSSION, LIMITATIONS, AND A POLICY PERSPECTIVE

The data from each research component were studied separately to look at trends, service gaps, content of care, and themes as reflected in the conceptual model described in Figure 3. The information from all data sources was also studied as a whole to fully answer the research questions. Data gaps and inconsistencies seen in the chart reviews were partially explained by data collected from key informants. Service delivery successes and challenges were identified. The chart reviews provided evidence of the access to and the content of postpartum visits within the faculty and resident clinics. Combined, the three data sources created a multi-faceted picture of the postpartum visit at UNC.

This chapter will begin by summarizing the results of the study and offering a critique of the methodology. Next it will discuss a number of key state and national issues that are of relevance to the postpartum visit. Finally, this chapter will present opportunities for improvement at UNC from both a pro and con perspective. The purpose of this chapter is to synthesize the prior chapters and set the framework for the study's recommendations in Chapter 8.

Figure 3: Conceptual Model



Data Synthesis

A review of the results of all three data sets upholds the study's premise that there are health care service modifications that can be made within the UNC Obstetric Program to improve the capacity of the postpartum visit to promote preventive services. This finding is reflected in the answers to the research questions described below.

The research questions in Aim 1 focused on utilization of the postpartum visit. The chart reviews revealed that 6% of mothers with private insurance and 30% of mothers with Medicaid did not receive the standard 6-week postpartum visit. Mothers who were younger, had Medicaid or were Uninsured, were unmarried, and/or had other children were the least likely to receive a postpartum visit. Mothers who were African American, Hispanic, Native American or other were less likely to receive a postpartum visit than their Caucasian counterparts. Mothers who received care in the resident clinic were less likely to receive a

visit than mothers seen in the faculty clinic. About 20% of mothers who had preterm infants, anemia, diabetes, gestational diabetes, hypertension, and/or pregnancy-induced hypertension did not receive a postpartum visit.

Aim 2 sought to describe the content of the postpartum visit at UNC. The most common services provided to women were family planning counseling, screening for postpartum depression, the provision of /counseling about a Pap Smear examination, and the provision of information about the timing of their next well-woman visit. Providers did not recommend vitamin use often and very few screened for substance abuse, maternal/infant bonding, and family violence. Only 7% of the women who received a postpartum visit received counseling about weight and nutrition. A list of eleven core services was compiled based on the literature review and from the data available in the charts. Of these elements of care, 52% of the women received 4 or fewer services at their visit. Only 11% of the sample cohort received at least seven or more services. No woman in the sample received more than 9 services at the postpartum visit. Mothers who had Medicaid or were uninsured, were young, and/or were single received fewer services than other mothers. Mothers who were African American or Hispanic also received fewer services than other women.

Additional service gaps were evident in the chart review data. While almost half of the mothers in the study had a hematocrit level at hospital discharge that required a retest, only 16% were re-screened at their postpartum visit. While the cut point for anemia used in the study may partially explain this, the number of women screened is still low. Further, 63% of the women who had gestational diabetes did not receive postpartum follow up per American Diabetic Association Guidelines. Ninety-three percent of the mothers with pregnancy-induced hypertension were not given a follow up plan at their postpartum visit.

Forty-eight percent of the mothers of preterm infants did not receive postpartum counseling specific to any risk reduction measures for future pregnancies. While providers expressed an interest in all of the potential new resources for the clinic, family planning follow up and weight loss/nutrition counseling were the areas selected the most frequently as being needed.

The data collected for Aim 3 described the practice of providers at UNC in regard to the postpartum visit. The chart review revealed differences in practice between faculty and residents in seven areas of service. Residents were more likely to talk with their patients about substance abuse, maternal/infant bonding, family violence, and Pap Smear screening. They were also more likely to provide family planning than faculty. Neither group did well in talking with mothers about weight and nutrition or about their return to sexual activity.

Aim 3 also answered provider attitudes toward the postpartum visit. Maternity care providers who responded to the survey agreed that UNC could improve their ability to provide preventive services to new mothers who have unmet needs. Communication was an issue for providers, with the lack of availability of information about the woman at the time of her visit being a concern. Many of the health care providers, particularly the residents, nurse practitioner, and nurse midwives suggested that at least a portion of their patients considered them to be their primary care provider. This was similar to some of the results of the literature review that suggested that women of reproductive age often consider their OB/GYN as their primary care provider.(118)

Results for Aim 4 found that there are a variety of health system issues that impact the postpartum visit. These include communication problems, constrained financial resources, clinic capacity challenges, poor marketing of the visit, difficulty in providing continuity of care in the resident clinic, challenges in reinforcing policies among a reportedly

transient provider population, limited attention to the visit, and a high-risk patient population—medically, economically, and socially.

The questions in Aim 5 reiterated a number of specific issues that related to the health system constraints, finding that there are a number of gaps that need to be addressed in order to improve the UNC Obstetrical Program’s ability to provide integrated postpartum visits. There were also a wide number of solutions and ideas for addressing those gaps. These included: implementing quality improvement initiatives, enhancing communication between out-patient and in-patient prenatal and postpartum care services, offering group classes for new mothers, augmenting the content of the visit by providing more educational materials, and having clinicians with different training levels provide this care. There were calls for enhanced communication and improved record keeping. There was an interest in seeing mothers more frequently during the weeks and months postpartum, however, there was also recognition that lack of reimbursement for these visits would make it difficult to accomplish for some groups of patients. Overall, providers and administrators at UNC were interested in improving the content of this visit and the care offered to new mothers.

Limitations

The three components of the study allowed for the assessment of basic patient health care needs, postpartum visit content, health care system issues, and provider attitude and practice. The data collected provided a basis to answer all the research aims and to make informed recommendations (forth coming). However, there were limitations to this study.

First, the study did not assess women’s perceptions and opinions about the postpartum visit. While the comprehensive literature review provided an initial understanding of women’s postpartum health needs and access issues, the lack of consumer

input is a study gap. New mothers from both the faculty and resident clinics should be surveyed as part of future efforts to effect postpartum care change.

A second limitation to this study is the reliance on provider notes regarding the content of the postpartum visit. It is possible that the provider covered a variety of health concerns and topics with the mother and then neglected to dictate them all at the close of the visit. Lack of time or interest on the part of providers might also lead to curtailment of their dictation and thus a reduction in the quality and content of the postpartum visit note. It is also possible that the nurses provided health education during their time with the mother during intake that was not documented. Overall, the availability and complexity of the data (or lack thereof) is likely to correctly describe the reality of postpartum care for some women. Additionally, in medicine it is generally accepted that if something was not recorded in the chart it was not done. As such, if providers had offered a service, it is expected that the note reflect the care provided.

The Perinatal Records were not utilized as part of the data collection for this study. The hospital discharge summary highlighted many key variables from that data set. The benefit of collecting only one or two new variables (# prenatal visits and educational background) did not balance the amount of effort and time it would take to access the additional records. Further, studies have already demonstrated a link between the number of prenatal visits and educational level with postpartum visit utilization. The WebCIS data provided over 30 variables per woman with adequate information to answer the study questions. Further, when a patient returns to UNC with a second pregnancy, the clinic currently only refers to the hospital discharge summary as historical information about her

pregnancy. Given the weight of this summary within the UNC system, it is relevant to use it as a base for this research.

Another limitation is that the sample size for each data component is relatively limited. However, the current size would seem to be adequate, however, to create a deeper understanding of the barriers and facilitators to the postpartum visit at UNC and assess whether the postpartum visit is addressing women's needs and moving them toward well-woman care. A particular challenge for the study's ability to respond to the research questions in Aim 2 regarding the content of the postpartum visit was the large number of charts with missing data. Of the 400 charts reviewed, 94 of them did not include postpartum visit transcribed notes. This is both a reflection of postpartum utilization (70 women did not have a visit) as well as inadequate provider/staff attention to the dictation and posting of postpartum visit notes. A larger sample size might have added more records with transcribed postpartum notes to the data pool. Still, there was adequate information in the records to respond to Aim 1 and to understand the trends in services provided at the postpartum visit. Further, the lack of a postpartum visit or not for 24% of the participant pool is an important study finding.

Finally, the abstraction form had to be modified to better suit the content available in the WebCIS database after an initial review of 20 charts. The initial form assumed a greater complexity of information than was actually available in the chart. For example, the original form sought to look at how a provider counseled a patient on issues such as weight and contraception. The initial review highlighted the paucity of the detail available in charts resulting in a refinement of questions to assess simply whether or not a patient received counseling on the topics. Several variables were added to the form to better ascertain the

complete content of the visits. These included inquiries around bonding, the provision of breast exams and Pap Smear tests, and recommendations for a well-woman visit. Due to the paucity of information available in many postpartum notes, the providers received “credit” for services rendered even though there were few details as to how that services was given.

In terms of the key informants, the interviews were not recorded and resources were not available to invite an additional note taker to attend the session. Additionally, I conducted all of the interviews. As such, bias might have been introduced into the results of the key informant interviews. However, the nature of the questions, the relatively short length of the interviews, and the immediate transcription of the results, served to reduce bias. Providing a copy of the interview to the informant was another step taken to address this bias. Further, there were some overlapping questions among interviews with key informants. As such, the study was unable to examine the various perspectives of different staff and faculty on the same question. This, in turn, may have curtailed some of the potential comparability of the data by removing the opportunity to assess consensus or conflicting opinions across informants. It may also be difficult to discern how meaningful or weighty a comment is if only offered by one or two respondents. In spite of these limitations and loss of potential information, the informants appeared candid in their remarks and the data collected had depth and richness.

The provider survey also had a number of limitations. The low response rate among residents (38%) and the lack of information about the number of years in residency for those who did respond was problematic. Residents serve a large number of patients and their attitude impacts the care at UNC. Further, the ambiguous construct of some of the questions and the limited answer choices likely ended up curtailing the richness of the data that could

have been collected by the survey. In order to uphold anonymity, it was necessary to limit the amount of demographic data collected about respondents. This resulted in simplistic analysis based larger on provider background and years of experience. Due to the lack of racial and ethnic diversity among providers and the small size of some groups (such as Fellows), the IRB would not allow collection of race, ethnicity, and gender due to possible threats of respondent identification. Finally, several of the questions were developed to encourage providers to comment on general or neutral situations not specific to the UNC OB program with the thought that this would increase the respondents' candor. In the end, this may not have been the most effective approach. The survey results did, however, provide some insight into the attitudes and practices of the providers at UNC.

National and State Issues

There are a number of state and national challenges that impact the delivery of postpartum and well-woman services at UNC. These reflect the current perinatal paradigm that focuses on the pregnant woman, not the new mother or the woman who may become a mother. A major issue for many low-income mothers is that their access to health care insurance generally ends at 60 days postpartum. Based on the research that demonstrates a host of unmet physical, psychological, and social needs postpartum, new mothers would appear to need access to care for at least a year postpartum. This is particularly true for mothers who had high-risk pregnancies and/or poor birth outcomes. Considering the fact that Medicaid covers just under half of the births in North Carolina, expanding Medicaid for Pregnant Women through the first year postpartum would be an enormous and important undertaking. Strong arguments would need to be generated to defend the spending increase to Medicaid for this coverage. These arguments could need to justify the expense by

demonstrating the cost savings of this care. Caring for mothers and babies because we are ethically and morally obligated to do so as a society is a strong argument. However, this argument is even stronger in political circles when underscored by the preventive impact and related cost reduction it could have.

More analysis is required to model cost increases and savings for some of the proposed postpartum interventions. Dunlop and colleagues' 2007 study findings support the consideration of extending Medicaid coverage to include primary health care and family planning services for women who have experienced a poor pregnancy outcome(140). Gregory and colleagues in the Content of Prenatal Care state that for the uninsured, funding for prenatal care should not stop after the 6-week visit but should be extended to up to one year or more for women with chronic conditions identified during pregnancy(53). There have been some suggestions that expansions could be made to the State Children's Health Insurance program to cover parents, with a particularly strong argument that could be made to cover new mothers. However, in light of the current political situation and state budget issues, this coverage will require considerable advocacy and very strong arguments. The justifications for coverage for women as mothers could branch off from the nation's child focused paradigm, demonstrating the manner in which maternal health influences the foundation of health for children and families.

A different approach to providing wellness services for low-income new mothers would be to expand the care offered by the North Carolina Medicaid Family Planning Waiver Program. This would require some federal regulation changes as well as state support. Any additional services would have to demonstrate cost neutrality. Some states have begun to incrementally add services to their waiver programs so this is an area to explore. At a

minimum, high-risk tertiary care centers across North Carolina should work harder to assure at least that their low-income mothers are taking advantage of the program's current reproductive health services. Of the mothers currently with Medicaid for Pregnant Women in North Carolina, only one third of them utilize the Family Planning Waiver.(148)

With respect to the current Medicaid for Pregnant Women program in North Carolina, more could be done to expand the services that are reimbursed by insurers during the first 60 days postpartum. For example, while there are CPT codes for telephone contact with mothers during the first 7 and 14 days postpartum, these codes are not reimbursed by Medicaid in North Carolina at this time. Lactation support, nutrition counseling, and classes on topics such as family planning and adjusting to motherhood are not reimbursed either. With very tight operating budgets, even though providers have an interest in providing these services and do the best they can, these services and preventive opportunities won't be fully realized without augmented reimbursement. In order to fully utilize the postpartum visit's capacity for prevention, providers should be reimbursed for service enhancements during this critical time period for mothers and babies. Along these same lines, any waiver in the future for postpartum mothers should include reimbursement for services such as mental health care, counseling around postpartum smoking recidivism and Nicotine Replacement Therapy, and nutrition counseling.

Another glaring gap in care across the country is the lack of reimbursement for the postpartum visit for mothers who utilized Emergency Medicaid to pay for their birth. This follow up visit is a standard of clinical care and is particularly important for mothers who had cesarean sections or other complications during labor and delivery. While health care providers are likely to offer this service to mothers, the lack of coverage for this visit is

problematic. This gap again highlights the lack of attention and importance given to postpartum care and new mothers in this country.

Finally, North Carolina could increase the visibility of health issues for new mothers by tracking and reporting postpartum health indicators. These should include postpartum visit utilization rates, occurrence and treatment of postpartum depression, pregnancy intervals, postpartum smoking recidivism, and breastfeeding rates. Adding this data to the North Carolina Women's Health Report card and the annual Infant Mortality press release would be one small but immediate way to raise awareness about this important time for new mothers. The process of collecting and reviewing this information along with the data traditionally studied would be instructive as well. The state could work to add new questions to its PRAMS data to assess unmet maternal need postpartum. It is likely that if more attention was given to these indicators by the state and media it would impact the amount of attention given by providers and mothers. While state and national policy falls outside of the Obstetric Program's sphere of influence, UNC can and does still play a leadership role in addressing these issues. UNC has already been a driving force in pulling together groups of stakeholders to discuss the need for continued access to care for new mothers. Representatives from the NC Institute of Medicine, the Sheps Center for Health Services Research, the NC Division of Public Health, Action for Children, the Governor's Child Fatality Task Force, the March of Dimes, the Community Care Network, and several access-to-care focused groups have been brought together by UNC to further this dialogue. While separate from the postpartum visit, this visible leadership on the larger policy level may in turn have a trickle down effect to recognizing gaps in care at UNC and taking steps to address them.

Discussion

While there is interest at UNC in improving the care offered to new mothers, the data indicated that there is considerable work ahead to achieve a high level of postpartum care for all women. Several themes and issues emerged from the various data sources. The first was that 17% of the women did not receive a postpartum visit. The second was a problem in continuity of care due to inadequate information available about the mothers at the postpartum visit. Without the history provided by the prenatal chart and the integration of information from labor, delivery, and the immediate postpartum period, providers at UNC are forced to rely on memory or hospital discharge notes when providing the postpartum visit. This does not allow them to have a full picture of the woman's experiences and her special health needs. Further, it can slow down the clinical encounter by forcing providers to ask questions that would have been answered for them in the prenatal chart. While faculty are more likely to see their patients for their postpartum visit, many of the providers at UNC, particularly residents, have the experience of providing postpartum preventive care to women they do not know well. This lack of knowledge about the mother lends itself to inadvertent gaps in care on the part of the provider. Mothers are likely to share less personal information or concerns about their health with providers they do not know than with providers with whom they have built a relationship. Further, women likely do not know that personal information they may have shared during their prenatal care, such as attempts to quit smoking, is not available to their provider for the postpartum visit. The system of moving the prenatal record out of the hands of providers and into the hands of billing staff at UNC before the woman has completed her care at the postpartum visit reflects the paradigm that neglects the health of the mother once her child has been born. It also reflects a priority to maximize

reimbursement, elevating the billing process over patient care. True improvements in the quality of care at UNC will be difficult to effect unless a system is developed to insure that mothers and their needs are known to the providers who care for them at this important transitional visit.

Another theme that ran throughout the study data related to the care provided by residents and faculty. Married, Caucasian women with private insurance are more likely to receive continuous care from faculty, often the same provider, over time. Uninsured, single, minority women are more likely to receive care from the least experienced physicians with the least opportunity to provide care over time—sometimes even over the course of a pregnancy. This reflects the typical assignment of resources in teaching institutions and the trade off necessitated by a nation without national health insurance. Unequal utilization of the postpartum visit is particularly worrisome for women who, perhaps, have the greatest need for consistent and comprehensive care. Further, it suggests a multitude of missed opportunities for mothers both during and beyond pregnancy.

In addition, residents are physicians who are still in training, learning on the job so to speak. They rely on faculty and clinic staff to provide them with clear guidelines and protocol for their care. Residents may have less knowledge of existing hospital and community resources than faculty. They also see a large number of patients and are disadvantaged at the postpartum visit by the fact that they may not know very much about the women for whom they are providing care. Further, it is only recently that they have been allocated the same amount of time for postpartum visits as their faculty counterparts. It is also a relatively recent trend to have more experienced nurses begin to staff their clinic. In the past, the most experienced nurses worked with the faculty, the most experienced

providers. Residents were also more likely to report that their patients considered them as their primary provider than faculty. An argument could be made that the system of prenatal care in place at UNC is not peculiar to state-funded institutions. While this may be true, this same dual class system of care may be one of a myriad of reasons why our infant mortality rates are intractable and our rates of preterm birth have increased. The mothers who may need the most care, social support, and follow up services in the end may be receiving the least. Addressing this disparity will require large system change within the delivery of maternity care at UNC. Barring major intervention, an interim way to address this gap would be to focus any additional resources or new services such as those proposed in this dissertation toward the patients in the resident clinic.

A review of some of the data results indicated that in many ways the residents' practice mirrored that of the faculty. However, in some areas residents did better than faculty in terms of screening their patients, although their overall screening rates were still very low. Faculty performed better than residents in areas that related to continuity of care such as talking with women about their next well-woman exam. Interestingly, residents and faculty with the least training were the most likely to state that UNC was doing well as far as its provision of care to new mothers. While care is variable at UNC because it is a teaching institution, the academic setting is also an ideal venue for promoting the kind of learning opportunities available through activities such as quality improvement. The process of quality improvement involves learning about a particular health care intervention, developing a protocol for care, reviewing the system in which it is operating, developing benchmarks, implementing a change, and then evaluating the results. This presents many excellent

learning opportunities and may be one way to highlight and address some of the specific care inequities inherent in the delivery of the postpartum visit.

While the number of Hispanic patients continues to climb, the ability of the OB clinic to provide outreach, information, classes, and culturally and linguistically appropriate care to these patients has not changed. While UNC is committed (and obligated) to serve all patients, it may be that some of these patients would be better served within the public health system. The need for the system to address many broad concerns relating to patient care for Hispanic families is evident—from translation services to hiring bilingual staff. The clinic’s Spanish language class for mothers with gestational diabetes is a good example of the kind of care that could and should be offered. This work is challenged by the deficit that the hospital runs by providing the basic services to the low-income population it serves. That said the ethics of the care provided at present must be weighted over the bottom line. Linking Hispanic families back to local care where possible should be a point of consideration. This is not; however, an easy answer in light of the capacity issues faced in local health departments at present. Efforts have been made to share care for diabetic pregnant mothers with local health departments. A few are willing to do this while others claim that they don’t have the staff or training to do so. In the cases where mothers are high-risk and unable to receive care locally during their pregnancy, more attention should be paid to insure that their care is equal. In the growing environment of intolerance in North Carolina, it is even more important that UNC work creatively and with concerted effort to care for this population of mothers. Building partnerships with local clinics is one important approach to consider.

Because UNC does serve such a large number of low-income patients, the system faces significant resource constraints. As such, while there are services like nutrition

counseling that the clinic would like to offer, they are unable to do so without also identifying a revenue source. If such a source becomes a possibility, leaders can be motivated to make changes to add new services. One excellent example of this effort is the addition of a psychiatric nurse to the clinic twice a week. Recognizing that mental health issues including postpartum depression impacted the health of their patient population, leadership within the prenatal clinic and the Department of Psychiatry forged a partnership. A psychiatric nursing position was added to the clinic with a focus on working with mothers prenatally and postpartum who have mental health challenges. The addition of the nurse to the clinic then prompted a new protocol for postpartum depression screening and referral. While comparison studies are not currently available, it is likely that UNC is a leader in the state in providing psychiatric care to pregnant and new mothers. While the OB/GYN Department does not profit from this addition to the clinic, it also has been able to avoid losing large sums of money and satisfied the desire to provide good care at the same time. In considering recommendations for improvement, it would seem that there should be calls for the addition of new services to the clinic, more visits, and longer visits. However, the ability to enact these recommendations in many ways is out of the hands of the UNC Healthcare System. Discussed above in greater detail, changes in reimbursement and extended eligibility for health care must be addressed at a national and state level (largely through the Centers for Medical Services and the NC Division of Medical Assistance) before such recommendations can truly be realized.

Information collected from key informants suggests that the postpartum visit for women is as much a social visit as it is a medical visit. New mothers want to share their labor and delivery experience with their health care providers. They want to talk about their baby

and the challenges they are facing. It can be disconcerting for mothers to have this visit with a health care provider with whom they do not have a relationship. While this is most likely to happen to mothers seen in the resident clinic, sometimes mothers in the faculty clinic are also seen by someone other than their usual provider. When this situation is compounded by the lack of the mother's prenatal record, the integrity of the visit, and the woman's satisfaction with the visit are likely compromised. The consistent relationship that the women have in this situation is the one they may have with the clinic nursing staff. It is important to recognize the importance of this connection and consider ways to augment the mother's time with the known and trusted nurse during this clinical encounter.

This relationship "theory" is reflected in lessons learned from the Postpartum Prevention Plus Program (P4), intensive care nursery based, interconception health study, run through the Center for Maternal and Infant Health. This project has found that women are more likely to seek out medical care and advice from the Center's interconception program coordinator after they have had a chance to meet her and get to know more about her. This initial relationship building takes much longer than initially anticipated in the program design. The P4 program coordinator has the opportunity to offer a weekly high-risk postpartum clinic at UNC. While the clinic space is available and the provider is there, it has been a challenge to fill her clinic slots. Clinic staff hypothesize that the high-risk patients who have received care from the faculty clinic strongly prefer to see a familiar faculty provider—even above the opportunity to have a longer more extended health care encounter. While some faculty specialists believe that these mothers would be better served by a longer postpartum visit with a nurse midwife, the relational component of this visit seems to be a trump card. Recruitment to the clinic from the resident clinic has also been slow. While some

of these high-risk patients need a more complete postpartum visit, they still have a relationship with the clinic nurses that staff the resident clinic and chose to return there instead. Mothers with infants in the intensive care nursery, on the other hand, know the P4 nurse midwife and appreciate the opportunity to receive a postpartum visit in her clinic.

Of the many suggestions for improving postpartum care at UNC, the idea of providing classes and group clinical care to pregnant and new mothers was brought forward by a number of different informants over the course of the study. The shifting of prenatal care for resident patients from the traditional model to a group model such as Centering PregnancyTM was one idea mentioned. Implementing this model at UNC for the resident population could increase the mothers' sense of continuity of care. If a final class was held around the time of the postpartum visit, it might help maximize utilization of that visit as well. For mothers who speak Spanish, the group model of care could allow the clinic to provide mothers with linguistically and culturally appropriate care by maximizing their translator resources and allowing mothers to learn from and support each other. A business plan could be developed to implement this model of care within the clinic and then proposed to clinic leadership. There appears to be receptivity to the concept and for the resident patients there seems to be scheduling flexibility and potential. Increasingly, clinics around the country are turning to group models of prenatal care and education as a cost effective way to deliver improved care. The benefits of groups are many including shared experience, support, and augmented learning.

Other informants suggested classes as a way to increase opportunities for mothers to learn in groups about specific topics of interest that relate to their health postpartum. These classes could include: childbirth class reunions, contraceptive workshops, and nutrition and

postpartum weight loss seminars. One proposed option for clinic patients was to have a new mother class scheduled in the same way as “new to nurse” classes. These classes could provide an additional 30 to 45 minutes of education on important preventive health topics. There were concerns, however, that the diversity of patients combined with the very personal and different needs of new mothers might make it challenging to effectively deliver this class. Quarterly Childbirth Education Class Reunions may be the easiest place to begin. There is space available at UNC and the reunions could include fellowship, resources, and education. This would also be a point for recruiting mothers and fathers to other class series such as parenting.

While the proposition of increasing the number of new mother classes available at UNC is a good one, there are a number of challenges inherent in the idea as well. First, funding would be required to find instructors for the classes as well as to market them. Due to the distance some women travel to get to UNC, it is unlikely that many women will be able to take part in the classes held in the evenings or late afternoons. Coordinating these classes with clinic visits would be a good way to increase access, however, clinic staff suggested that the scheduling for this could be complicated and lead to some women needing to be at UNC for a long period of time. Reaching out to low-income and Hispanic mothers for classes is important to address some of the disparities in care uncovered by the study data. However, this population is the most likely to experience transportation and language barriers in accessing these classes. Efforts to offer classes to this population would need to be supported with sufficient funding and support.

The Women’s Health Information Center (WHIC) plays a leadership role within the NC Women’s Hospital in offering classes to support the needs of patients. They currently

provide most of the programming and classes offered at UNC that benefit women. As such, leadership for augmenting the number and kind of group learning opportunities for new mothers might best and most logically come from this group. The decision about convening partnerships, launching new classes or exploring funding opportunities needs to come from the WHIC Advisory Board. As part of their mission in serving women, it seems that the addition of short classes on contraceptives, healthy eating, and childbirth class reunions would be appropriate. Further, there are some stakeholders at UNC who expressed an interest in exploring the possibility of augmenting educational services. A first step in expanding the classes and services offered by the WHIC would be a formal presentation to the Advisory Board about the need for additional services for mothers. Partners would also need to be willing to step forward and assist WHIC in planning and implementing this additional care.

The key informant interviews in particular, showed a great desire among leaders at UNC to provide comprehensive care to new mothers. Many recognized that new mothers had unmet needs and expressed concerns about their ability to do more for them. There are also many solution-focused individuals within the system – people who can highlight programmatic gaps and then immediately move into brainstorming about ways to potentially bridge them. Additionally, the process of simply asking questions about the visit, of elevating its importance enough to warrant conversation, seems to give people pause to think about the care provided at that visit. This pause unveiled some important system challenges that can be addressed.

Reflection on the data results prompted further thought as to the leadership and public health elements required to successfully bridge the postpartum service gaps at UNC. A necessary first step will be to raise awareness about the areas where improvements are

needed to provide quality care and foster open dialogue about the provision of postpartum and interconception care. As part of this process, it will be important to talk with providers about the preventive role of the postpartum visit and about the unmet needs of their patients. It is also essential to weigh the importance of this issue against larger clinic and department goals. People will need to be convinced that this visit and care merits increased attention, time, and resources. Likewise, the impact of not providing quality postpartum care will also need to be presented.

Further, before any plans can be made as far as developing and the role of the UNC Obstetrical Clinic in interconception health, candid discussions should be held with administrators, faculty, and residents about their role as primary care providers. According to the literature review and the data, many women of reproductive age do consider their OB/GYN as their primary care provider. Is this a role the clinic is prepared to embrace more fully? Would there be a preference for expanded systems to refer patients to medical homes instead? If not, what is the clinic's responsibility for mothers in this respect? A key factor in this discussion is the hospital's business strategy regarding providing wellness care for women across the reproductive spectrum. The postpartum visit could play an important role in a strategy of integrated care.

The premise of this dissertation sought to demonstrate that there is opportunity for UNC to improve the delivery and content of the postpartum visit at UNC and to use this visit to move women forward in their wellness continuum. With the data in one hand and suggested recommendations in the other, there is still a need for leadership to connect the two, issue a call to action, and take steps to put UNC in the position to serve as a model for postpartum and interconception care excellence. Key informant interviews suggested that

there is not one particular individual within the OB/GYN Department who would be expected to play this role. Instead, it appears that what is needed is a leader or a team of leaders who will invest the time and energy needed to make this happen. This team may include some of the stakeholders who participated in key informant interviews or the provider survey. The next chapter lays out a path for these leaders to follow to improve the care and well-being of new mothers at UNC.

CHAPTER EIGHT

RECOMMENDATIONS

Bridging care from pregnancy through the postpartum visit and forward to women's wellness is not a simple task. The complexity is augmented when the patient population is low-income and high-risk medically and socially. Working within an academic, busy, and resource-constrained environment adds another layer of challenge. The research collected through this study found that while UNC was serving many patients well, there was room for substantial improvement in postpartum visit utilization and content of care. The gaps were not the result of a lack of interest on the part of the staff to provide excellent care, rather the offshoot of a complicated system and lack of attention to the visit and its significance.

The recommendations presented in this chapter were developed to work within the current UNC system to begin to take advantage of and create opportunities to strengthen their ability to transition women from pregnancy to new motherhood and beyond. They were drawn from the key informant data and supported by the provider survey and literature review. The underlying need for the various recommendations was based on some of the service gaps revealed by the chart reviews and key informants. Thought was given to the areas of intervention that could be realistically managed at UNC to effect change in the delivery of the postpartum visit. Recommendations address issues around a) attendance at the postpartum visit, b) the content of care provided at the visit, and c) planning after the visit is

complete. Two additional recommendations were made to address global areas relating to research and leadership.

The research revealed a number of serious systems issues in regard to the services that Hispanics receive at UNC. These concerns could be addressed through a separate recommendation. They could also be addressed by calling attention to the need for equitable, and linguistically and culturally competent services within all of the recommendations. In this manner, the importance of providing quality and equitable care to all patients will be considered as a fundamentally important element of all care at UNC. This dissertation will integrate these issues throughout the eight recommendations. These recommendations are listed in Table 17. The remainder of this paper will review each of these recommendations in greater depth, using a Strengths, Weaknesses, Opportunities, and Threat model as a guide. Each will be discussed individually and then they will all be summarized collectively.

Table 17: Recommendations for Postpartum Visit Improvements at UNC

Recommendations
1. Develop a unified, comprehensive interconception care initiative at UNC
2. Build a research consortium at UNC to improve knowledge about postpartum and interconception health and health care for women
3. Market the postpartum visit to women
4. Improve postpartum visit compliance by strengthening the continuity of care given by providers
5. Improve the information that is available about mothers at the postpartum visit by adopting an electronic prenatal record
6. Enhance the quality of the postpartum visit by implementing improvement initiatives
7. Expand the information mothers receive at the postpartum visit by increasing the number of educational resources they receive
8. Link low-income mothers back to local health departments and community clinics after their postpartum visit

Recommendation #1: Develop a unified, comprehensive interconception care initiative at UNC

The literature review and data described in this dissertation clearly point to the need to strengthen the capacity of the postpartum visit to promote prevention services. The study also suggests that maternal health needs are often under served and extend beyond the six to eight week visit for many women. The literature found few model interconception programs available to provide road maps to success within this paradigm change. These findings suggest that the development of a comprehensive interconception care initiative at UNC could not only offer the opportunity to enhance the health of new mothers, it could serve as a national model for other academic institutions to follow. This first recommendation is foundational to the implementation and success of the remaining seven.

In 2007, the Dean of the School of Medicine granted three years of support to the Postpartum Plus Prevention Program (P4) to improve the interconception health of high-risk mothers. This funding was given to the Department of OB/GYN on behalf of the Center for Maternal and Infant Health to launch and support this endeavor. Part of the Dean's interest in supporting this project is the potential it holds to place the UNC School of Medicine as a national leader in postpartum and interconception care. Additionally, the P4 project receives financial support and attention from the March of Dimes. Using these endorsement as a springboard, the OB/GYN Department at UNC should develop a multi-year, comprehensive, integrated, unified, interconception health initiative. This major effort should be a priority of the Department and included in its larger strategic plan and goal statements.

This initiative will require a recognized leader or leaders and the support of Department Chair, administration, faculty and staff. Gaining the general support of the Chair

of the Department of Obstetrics and Gynecology and the Division Directors, is an important first step in this process. Their interest and investment in the improvement of the quality of the postpartum visit at UNC is a critical catalyst for change. This is particularly important if the impetus for improving the postpartum visit comes from an individual or group that is one step removed from this inner leadership circle.

A first step in this process would be to build a partnership with a clinician in the OB/GYN Department who would partner with me in this outreach endeavor. In tandem, we would give a short overview at a number of different leadership meetings. This would need to be a persuasive speech highlighting the most salient research points, the reasons why it is important to make these changes at UNC, and sharing the recommendations described in this study. This would be followed by a presentation of the research and recommendations at OB/GYN Grand Rounds and separate presentations at Division meetings for Women's Primary Care, Maternal Fetal Medicine, and Midwifery as a way to initiate these conversations among faculty. The Department Chair and Division Directors will need to consider the importance of improving the postpartum visit in the context of other challenges faced in the clinic. The expense of the improvements both in human resources and fiscal outlay would be part of their decision equation. If they could see natural leadership and a home for the initiative this might sway their decision. Offering a staged implementation with many opportunities to plan, do, study, and act may also increase the likelihood that this project receive leadership's blessing. The initiative will also require a home. One possibility is through the Center for Maternal and Infant Health with support from key senior faculty and primary care. Other Divisions within the Department or the Chair's office itself may also provide a base for this initiative.

Once the will for the initiative has been established, the next step should be to prepare a formal strategic plan to support implementation of the remaining seven recommendations. The plan should consider funding, timing, clinic systems issues, stakeholders, and leadership. It should also consider the needs of the many different populations served at UNC, with special attention to the needs of mothers who are low income, from minority groups, and speak a language other than English. The multidisciplinary planning team should include representation from across the department and prenatal clinic.

The planning process should include prioritization of the recommendations. As described in Chapter Three, a modified Failure Mode and Effects Analysis (FMEA) is one method that can guide thinking on the topic of prioritization. Three elements that seem to be intrinsic to implementing a program or service are cost, ease of implementation, and the ability to effect change. Participants in the planning process may be asked to rank each of the recommendations by the three elements described above. These rankings could then be used to set a general direction to the development of a project timeline.

The strategic plan should be very specific and have clear and measurable goals. Leadership for the implementation of the various recommendations may vary based on the skills required for the task and the energy/interest of faculty and staff. The Department will also need to engage additional stakeholders in this initiative. They should include: hospital administration, the Women's Health Information Center, Physician and Associates billing department, the UNC laboratories, the 16 outlying health clinics, and the quality improvement office. Table 19 below provides a SWOT analysis for this first recommendation.

Table # 18: A SWOT Analysis for developing a unified, comprehensive interconception care initiative at UNC

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ This initiative is diverse enough to engage a variety of Divisions within the Department in research. ▪ Having a formal initiative and strategic plan in place will facilitate the implementation of the other recommendations. ▪ A major interconception initiative would work to support the Dean's vision for leadership on this issue. It could highlight the work of the Department in this regard. 	<ul style="list-style-type: none"> ▪ There is not enough interest and enthusiasm on the part of the Department Chair and/or Division Directors to create an initiative. ▪ The strategic process drags on, taking more time than it should and slowing down the initiative. A long planning process also runs the risk of being completed AFTER the Dean's support has ended.
<ul style="list-style-type: none"> ▪ UNC would be a visible, national leader in the provision of quality postpartum and interconception care. ▪ UNC could serve as a model for postpartum and interconception care within academic medical centers, potentially providing leadership for replication projects around the state and country. ▪ This initiative could build good will between UNC and local clinics and providers. ▪ The OB/GYN Department and the Center for Maternal and Infant Health could be recognized by SOM leadership for their efforts. 	<ul style="list-style-type: none"> ▪ Faculty in other Divisions feel that their projects were over looked in favor of an interconception health initiative. ▪ There is interest in the initiative, but funding does not follow to support the strategic plan. People become discouraged and the initiative ends. ▪ There is divisive disagreement among providers regarding the role of the obstetric program in providing interconception care.
Opportunities	Threats

As seen in the SWOT analysis, the recommendation's largest challenge is garnering enough support and interest to get out the starting gate. Disagreement among staff about the importance of the project and lack of engaged leadership could sideline this initiative completely. The inability of the Divisions and partners to work together and not securing funds to drive the campaign would also be major barriers to this effort. Internal and external

politics are important and would need to be taken into consideration in planning for such a major initiative.

There are many advantages to creating an interconception initiative at UNC. The planning of the initiative could allow for the development of stronger relationships among OB Department Divisions and partners as they work toward a common goal. It offers the opportunity for new leadership to emerge at a variety of levels and disciplines. It also tests the ability of a tertiary academic medical institute to implement a prevention-focused campaign. This work could improve not only the postpartum visit, but could bridge into other preventive activities for mothers in between pregnancies. Because many women who have babies at UNC go on to have more children, the ability to measure the impact of such an initiative is feasible.

A comprehensive Department wide initiative focusing on interconception care at UNC would offer a very innovative approach in addressing women's health beyond pregnancy. This work already has the interest and support of top leadership in the School of Medicine. If done effectively, such an initiative could not only enhance the care that new mothers receive at UNC, it could advance the status of the University towards its mission of leading, teaching, and caring.

Recommendation #2: Build a research consortium at UNC to improve knowledge about postpartum and interconception health and health care for women

The current perinatal paradigm, which focuses on pregnant women as the point of intervention for improving birth outcomes, is changing. Interest is beginning to shift to the role that the health and wellness of mothers prior to and between pregnancy offers in improving outcomes for mothers and babies. After years of stagnating rates of infant

mortality and increasing rates of preterm birth, there seems to be receptivity within the field to considering new approaches to this long-standing problem. Addressing the interconception physical, social, and emotional needs of mothers is a new tactic in the fight against infant mortality and other poor pregnancy outcomes that is gaining support. As the literature review for this dissertation revealed, this is also an area where there are many gaps in knowledge and research.

For UNC, this gap offers many opportunities for innovative research to build a more robust body of knowledge relating to this topic. More information is needed regarding the biomedical factors involved in postpartum and interconception care. Knowledge is needed about the social and economic factors involved in the delivery of these services. Research is required to learn more about clinician behavior as well as patient needs, satisfaction, and motivators for behavior change. Topics open for exploration include: the content of the postpartum visit, the timing of postpartum care visits, the types of screening and tests that should be completed in the postpartum period, how to increase utilization of the postpartum visit, how to re educate providers about the postpartum visit, the different needs and concerns of mothers who had poor birth outcomes, the timing of mothers' receptivity of health messages postpartum, counseling techniques and models for new mothers in regard weight loss, healthy eating, and nutrition, and much more. The UNC interconception initiative described in recommendation one and the proposed strategies for change in recommendations three through eight offer a host of applications for study and publication. Studying our own postpartum visit quality improvement efforts will be helpful to the field.

The Dean of the School of Medicine's investment in the P4 project supports the pursuit of these research opportunities. To support his vision of UNC as a national leader in

the field of preconception health, the Dean has provided funds to the OB/GYN Department in partnership with the Center for Maternal and Infant Health to support the development of a research consortium on the topic of postpartum and interconception care. Within an academic medical center, the pursuit and mastery of new knowledge is a highly sought after and rewarded objective. A preconception and interconception research consortium would allow for collaborations among a wide variety of schools and disciplines. The Schools of Nursing, Social Work, Public Health, Medicine, School of Dentistry, Women’s Health Studies, and even Global Health could be engaged in components of this research. A variety of Departments and Divisions within the Schools could also be tapped. Outreach to community partners, the Center for Women’s Health Research, and other groups could also enhance this work. Funding secured through collaborative grants could support a variety of projects and researchers. Table 21 contains a SWOT analysis for this recommendation.

Table # 19: A SWOT analysis of building a research consortium at UNC to improve knowledge about postpartum and interconception health and health care for women

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Research initiatives are consistent with the goals of an academic learning environment. ▪ The work of improving interconception care at UNC could be the foundation for the research initiatives, essentially addressing several recommendations at the same time. 	<ul style="list-style-type: none"> ▪ Faculty may not be interested in this field or topic and thus not be willing to spend their time on related research initiatives. ▪ Competition among practitioners and academic researchers impedes collaboration. ▪ A collaborative is initiated, but there is not adequate leadership or funding to sustain it beyond the initial support provided by the Dean.
<ul style="list-style-type: none"> ▪ UNC has the chance to be a visible, national leader in this promising area of prevention. ▪ Research results could drive practice, improve care for mothers, enhance birth outcomes, and shape the future of 	<ul style="list-style-type: none"> ▪ Federal, Foundation, and State funding is reduced for new research initiatives. As a new area of study, interconception and preconception health may not be considered as important areas for research and funding.

<p>interconception health.</p> <ul style="list-style-type: none"> ▪ The partnerships developed through a consortium could be utilized to study other topics of interest to faculty. Over time they would not be limited to the postpartum visit and interconception care. ▪ High likelihood that related RFPs will be released in the next few years. 	<ul style="list-style-type: none"> ▪ Another Department or School might “take” this idea and pursue funding and support on their own.
Opportunities	Threats

While issues of funding and leadership are thematic as potential challenges to all of the recommendations proposed in this dissertation, they are particularly significant to the establishment of a research consortium. Competition is another issue that is likely to come into play in this recommendation. This could manifest between researchers vying for authorship and ownership as well as among Departments and Schools in terms of the submission and location of grants. While this would still be good for increasing the knowledge base in this area, it would pose problems for a UNC consortium. The challenges of this initiative however are worth the effort to overcome in light of the tremendous research potential offered through the consortium. By working collaboratively, UNC can pool the expertise and influence of many leading researchers to develop a multifaceted agenda for increasing the national knowledge base on the postpartum visit, postpartum care, and interconception health.

Recommendation #3: Market the postpartum visit to women

Currently, mothers do not receive any information about the postpartum visit except for a mailed appointment slip and an automated telephone call. As such, mothers, especially first time mothers, may not understand the reason for the visit and not know how to prepare so as to maximize this health care encounter. Further, if mothers are unaware of the

importance of the visit, they are more likely to decide not to attend their visit. While marketing will not address issues such as transportation, childcare, and time constraints, it can increase the commitment some mothers will make to keep their visit. If done well, marketing materials can provide mothers with information to encourage them to ask questions and make sure they ask for what they need at the postpartum visit. Patient demand can drive clinical practice.

There are multiple ways of marketing this visit to women. Campaigns, promotional items, and advertisements in mothers' magazines could promote this visit. Engaging other health care providers such as pediatricians in outreach activities could also work. Before a specific marketing campaign is designed, it is imperative that mothers are brought into the discussion. It is critical that time is allocated to talk with a diverse groups of mothers about what they would like from their postpartum visit, why it does or does not matter to them, and what would motivate them to advocate for improved visits.

One possible straightforward and low cost way to market the visit could be achieved by developing a booklet about the visit and distributing it to new mothers in advance of their appointment. The purpose of the booklet could be many fold - to provide new mothers with affirmation about some of the things they are experiencing, highlight what isn't normal and needs immediate attention, inform them about the purpose of the postpartum visit, and encourage them to come prepared to get what they need from the visit. An online search and discussion with a number of national contacts was fruitless in finding a postpartum booklet available for purchase. As such, in order to complete this recommendation, a booklet would need to be developed.

In light of the utilization data from this study, there are several elements and messages that need to be included in a postpartum visit booklet. First, the images in the booklet need to be of racially and ethnically diverse women and include pictures of young mothers. It needs to highlight the reasons why mothers should attend the visit. It should also inform mothers with Medicaid for Pregnant Women that the visit will be reimbursed as long as it takes place before the end of the month of the 8th week postpartum. There should be information included for mothers who may need additional screenings postpartum and an alert page to help mothers know when they should not wait until their 6-week visit to seek care. Including specific information about what to expect during the visit and a place to jot down questions would also be useful.

The educational content of this booklet should ideally pick up where the current hospital distributed postpartum guide ends. Importantly, this information will need to be available in English, Spanish and any other languages if needed. The Spanish language version of this booklet should be shown to Hispanic women and individuals experienced working with Hispanic mothers to discuss relevant cultural issues that should be changed or addressed. Both the English and Spanish (and other as needed) versions of the booklet should be focus tested with mothers to be sure they achieve the desired results.

Limiting the content of the booklet may prove to be a challenge. New mothers need a great deal of information. Too many complex messages could detract from the goal of highlighting the postpartum visit and immediate new mother health concerns. The booklet's overview of a number of topics could be supplemented at the postpartum visit by other fact sheets and information. The literacy level of the book must also be carefully considered both in English and in Spanish. Table 21 is a SWOT analysis for this recommendation.

Table 20: SWOT Analysis of Marketing the Postpartum Visit to Women

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Provide helpful information to new mothers. ▪ Begin the thought process about important topics such as family planning. Women should start thinking about their reproductive life plans before the visit. This may help them have a better dialogue with their provider as they select their contraceptive method. ▪ Provide mothers with reasons why they should come for their visit. ▪ Engage mothers in their own health care. ▪ Potentially encourage mothers who may not get care, to come in sooner if they have a serious problem. ▪ Increase utilization of the visit. 	<ul style="list-style-type: none"> ▪ Mothers may not take the time to read it. ▪ Not all mothers can read or can read well. ▪ Marketing material may generate additional questions for mothers. Clinic needs to be prepared for additional calls from these mothers prior to the visit. Calls should be answered in Spanish as well. ▪ Still may not be enough to help mothers overcome barriers to the visit such as child care and transportation.
<ul style="list-style-type: none"> ▪ This is an innovative product that is not yet on the market. If the booklet is effective, other groups in North Carolina such as the Healthy Start Foundation might be persuaded to add it to their patient education distribution. This would be good visibility for UNC. ▪ Clinic may choose to include specific reminders along with the booklet for patients who need to come to their visit fasting. ▪ Increase patient satisfaction with their care at UNC. Increase patient's sense of self-efficacy. ▪ If sufficient funds were available, UNC could make copies of the booklet available to its outlying clinics and referring providers as a courtesy. 	<ul style="list-style-type: none"> ▪ For marketing materials that are mailed, mother's address changes between delivery and the visit may impede her getting this information. ▪ Staff unwilling or unmotivated to take the time to make sure the booklets are sent. ▪ Cost of mailing the booklet. ▪ Cost of printing and reprinting the booklet. ▪ Booklets will be given out at the wrong time such as at the postpartum visit itself. ▪ May get lost in the pamphlets and materials new mothers receive in the mail and from their pediatrician.
Opportunities	Threats

While the composition of the booklet is important, the system for distribution of the booklet is even more important. The product will not be useful if it can't be incorporated into practice. This booklet could be sent to mothers along with the appointment reminder for the visit at about 2 weeks postpartum. While the reminders at UNC are automated and sent out via a large and complex system, clinic front desk staff have suggested that it would be possible for them to mail out the booklets at 2 weeks postpartum. This could be done as long as the booklets were already placed in a sealed envelop and all that was required was affixing the patient's address label and putting it in the mail. Based on the interest of the staff and their desire to expend additional effort, the mailing could include a letter from the clinic in English on one side and Spanish on the other encouraging the mother to come for her visit. It is also possible that pediatric clinics might consider giving a copy of the booklet to mothers at their two-week well baby visit. The timing is important, as new mothers need to receive the booklet in advance of their scheduled visit.

There are several challenges to this recommendation. Funding for the development, printing, and ongoing distribution of the booklet is one issue that has to be addressed. A bigger barrier is the literacy level of mothers, in English or in Spanish. New mothers are often tired and busy so finding time to read materials is also a challenge. Further, mothers' desire to attend the visit may be increased by marketing materials such as a postpartum visit booklet. However, if she does not have transportation or has already returned to work, the booklet can't help her get in for her visit. Additionally, while women may come prepared for their health care encounter, their provider still has "control" of that visit. He/she can take the time to respond to patient questions and thus empower the patient, or he/she may be very busy and continue to provide the visit per status quo.

As this recommendation was being developed, the concept of creating a postpartum visit booklet was shared with the March of Dimes, a private foundation dedicated to improving maternal and infant health. The foundation was very interested in the booklet and provided an initial grant of \$5,000 to develop and print a postpartum visit booklet in English. The March of Dimes provided a second grant to develop and print a culturally and linguistically appropriate postpartum visit booklet for mothers who speak Spanish.

The development of the booklets offers an excellent catalyst to begin to bring mothers together to discuss the postpartum visit. Focus groups could be convened around using the initial draft of the booklet as a conversation starter. Once mothers have given their input and the booklet revised accordingly, the booklets will be reviewed by a variety of stakeholders at UNC, including clinic nurses, the Patient Education Services Committee, and a few key faculty members. They will also be field tested with new mothers. Funding from a foundation such as the March of Dimes could cover the booklets and the envelopes. Having “free” copies of the booklet in hand along with some initial postage would allow for the relatively easy implementation of this recommendation. In order to more permanently “institute” this recommendation, discussion needs to be had with the OB/GYN Department to assist with covering the postage and paying for future reprints or edits. There would have to be a commitment from clinic administration to support the distribution of the booklet over time.

A key informant suggested that increasing the patient’s ability to ask her provider for what she needs is one way to impact the content and quality of postpartum care. This booklet would offer one small step toward providing women with more information to know what they should expect from the visit. This in turn could increase patient demand for quality postpartum visits. Further, effective educational materials can also provide mothers with

important information about their health at a time when they are experiencing major physical and emotional changes. With this in mind, it is important that providers are aware of the messages being sent to patients and prepared to encourage and respond to questions. Indeed, it may be necessary to market the postpartum visit to some providers as well.

New mothers are the target audience for many marketing campaigns. These include products such as diapers, formula, and infant care items as well as behavior change such as car seat safety, Back to Sleep, immunizations, and the Purple Period of Crying (shaken baby syndrome prevention). These campaigns all focus on the woman's role in mothering her infant. They do not highlight her needs and physical and emotional challenges. Marketing the importance of postpartum care to mothers would offer something new and different to women – information and opportunity for them in regard to self-care. With so much of our current paradigm framed around the baby, taking the initiative to address the needs of the mother is innovative and necessary to improve health.

Recommendation #4: Improve postpartum visit compliance by strengthening the continuity of care given by providers

Over the course of the study, there were a number of comments and reflections on the Obstetric program's ability to provide continuity of care to mothers, especially those being served through the resident clinic. While some mothers may have the same provider for all of their prenatal visits, others may not have ongoing relationships with their provider. Nurses who staff the faculty prenatal clinics may know the needs and status of the mothers they serve, but nurses who support the resident clinic may or may not know their patients well. This is the result of serving large numbers of prenatal patients with complex needs. It is also the manifestation of language and cultural barriers. There were also differing opinions as to

whether or not mothers were scheduled for their postpartum visit with a provider they know. Faculty often see their patients for the postpartum visit, but residents and fellows may not have seen their patient at all prior to the postpartum visit. The lack of information about a patient available at the visit as discussed earlier further compounds issues around continuity of care and the patient's sense of being "known" to her provider. Finally, there is also a cohort of mothers at UNC who may have had to transfer their care to UNC near the end of their pregnancy due to a medical emergency or high-risk condition. While they then receive their postpartum visit at UNC, they may not have had enough time to establish a relationship with their provider or nurse.

The utilization rates of the postpartum visit likely reflect the continuity of care provided by the clinics. If mothers do not have a strong connection to the clinic during their prenatal care, they are less likely to make the time to come back for their postpartum visit after the baby is born. One key informant stressed the social and relational aspect of the postpartum visit for women. She noted that mothers want to come back and talk about their labor and delivery experience. They want to show off their baby and share their experiences and challenges as a new mother. And, she stressed, this really only matters if they have a personal connection with a health care provider. The provider does not necessarily have to be the woman's physician or nurse midwife. The nurse who she sees at her visits, her perinatal specialist (if she is a patient within the Center for Maternal and Infant Health), the P4 coordinator (if her baby is in the NICU), her case worker (if she is in the Horizons or Beacon program), or her maternity care coordinator (if she is from Orange County) are providers who build relationships with pregnant and new mothers.

Lessons learned from the Postpartum Plus Prevention Program's (P4) high-risk postpartum clinic can be applied to this recommendation. In August 2007, a high-risk postpartum clinic was developed and staffed by the program's nurse midwife coordinator. This clinic was initially created to serve mothers whose infants were in the intensive care nursery. As these patients did not fill all the available slots, the clinic was made available to other high-risk mothers in January 2008. The concept was that the nurse midwife would be able to provide longer, more comprehensive visits than the specialist providers. Unfortunately, it has been difficult to fill the available clinic slots. It seems that patients who had seen a Maternal Fetal Medicine Specialist wanted to see that same provider for their postpartum visit, regardless of the length of time they would have with that provider. Further, one key informant highlighted the fact that mothers bond not only with the residents or faculty during prenatal care, they develop a relationship with the nurses in the clinic. The nurses tend to be a more constant presence from visit to visit. They also provide teaching over the course of the pregnancy, beginning with the first "new to nurse" visit. The high-risk postpartum clinic was necessarily scheduled for Wednesday afternoons when the rest of the clinic was closed. This meant that many of the familiar faces known to these mothers were not necessarily available to check them in for care. The clinic's biggest success is with the mothers who know the nurse midwife from her visits with them in the NICU. They have a relationship with her and the postpartum visit serves as a way to deepen the trust they have with the nurse midwife. The postpartum utilization rates of mothers with infants in the NICU are improving because of this opportunity.

While UNC does an excellent job at providing care to high-risk mothers, health departments across the state often offer additional services such as postpartum home visits.

Maternity care coordinators are in contact with mothers after they have given birth and throughout the first six to eight weeks postpartum. They encourage mothers to get their postpartum visit and also do a final health and social risk inventory before closing their case at 60 days postpartum. Most clinics also provide well-baby care and WIC, which gives new mothers additional contacts with the clinic and reminders about their postpartum visit. Many public health clinics across North Carolina offer nurse home visits to low-income mothers within the first two weeks postpartum. These many contacts may also serve to “bond” mothers with the health center as a good source of care for their families. While it is not expected that UNC serve the same function as the public health clinic, there are elements of service that they could consider adapting to their practice to enhance utilization and relationship.

There are a number of things that UNC can do to strengthen their connections and relationships with mothers. The cost for these activities ranges from very low to moderate. All of the activities require time, attention, and follow through in order to happen effectively. A commitment to building relationships with mothers and improving postpartum visit utilization is required on the part of staff and faculty if these ideas are to be successfully implemented.

The first thing that should be done to improve continuity of care is for clinic schedulers to make it a priority to create as much consistency for patients as possible. They should work with women and providers schedule patients to see the same resident(s) and faculty member over the course of their pregnancy. While consistency with a single provider is a challenge within the resident clinic, it is still possible to limit the number of different residents the patient sees over the course of her pregnancy. The clinic can also capitalize

upon the strong relationship nurses can build with mothers. Within the continuous transition of the residents, the nursing team remains more constant. As such, schedulers should work with the nursing team to be sure that mothers at least have the same nurse for each of their prenatal visits as well as for their postpartum visit.

A second strategy focuses on including care coordinators as part of the prenatal and postpartum visit team. In order to fully capitalize on this strategy, the clinic needs to work more proactively to insure that low-income mothers are linked with a Maternity Care Coordinator (MCC). This could be done through partnerships with local health departments and the state coordinator of the North Carolina Baby Love Program. The MCC program is under-utilized in North Carolina. MCCs provide important support to new mothers and can also link them with many needed resources. Coordinators are already in place at UNC for pregnant mothers with fetal anomalies, substance abuse problems, issues with domestic violence, and/or who have Medicaid and live in Orange County. All of these coordinators should be informed of the importance of the postpartum visit and engaged in efforts to provide outreach to mothers to encourage them to come in for the visit. To capitalize on the relationship these coordinators have with the mothers, they could plan to meet with the mother before or after her postpartum visit as part of the services they provide. In situations where the mother may not know her health care provider well, having an appointment with someone she does know could increase her motivation to attend the visit.

A third way to improve women's connections to UNC is to hire a bilingual nurse for the resident clinic. Currently, Hispanic mothers communicate with their health care providers largely through translators, if they are available. Having a nurse available who could communicate directly with Hispanic patients in Spanish would improve the information and

education they receive. The nurse would also become a familiar person to this group of patients, which could serve as a motivating factor for them to return for their postpartum visit. While it is difficult to recruit bilingual health care providers, given the fact that over 30% of the resident clinic patients are Hispanic this seems to be worth the effort and expense. Given that this population is at risk for not attending the postpartum visit and have high fertility rates, increasing their motivation for coming in for this visit is important to improving care.

Another potential strategy is to consider ways for the P4 high-risk postpartum clinic nurse midwife to develop relationships with mothers prior to the postpartum visit. This could include seeing mothers for some of their later prenatal care visits, visiting them while they are in-patient, and calling them at one or two weeks postpartum to touch base. This weekly clinic might also offer care to mothers in the resident clinic instead of to mothers seen by faculty. The mothers in the resident clinic are more likely to not know their provider and be more open to seeing someone new for their later pregnancy and postpartum care. The availability of the clinic could offer a safety net for mothers who have multiple social or behavioral risk factors, high parity, are very young, and who have not been able to develop a strong, consistent relationship with a provider at UNC during their first two trimesters of prenatal care. These mothers are at high-risk for not receiving a postpartum visit, even though they may have the greatest need for comprehensive postpartum care. Discussions would need to be held with clinic staff, the supervising physician, clinic administrators, and schedulers to determine which mothers should be referred to this clinic.

Another strategy to consider is to offer a different kind of prenatal care to patients at UNC. One model of care that has been shown to increase women's bonds with each other is

Centering Pregnancy™. While Centering Pregnancy™ focuses on building supportive relationships among the women not as much with the provider, mothers can be powerful motivators of each other to get the care they need. Reframing prenatal care delivery and instituting this kind of care would be a major undertaking at UNC on many levels. However, colleagues in the UNC Family Medicine Program have successfully integrated this model into their prenatal care program. The OB program might consider piloting Centering Pregnancy™ to see if this model of care a) would work within the program, and b) if it increased attendance at the postpartum visit.

Finally, the OB program should take the time to ask mothers what they want as far as relationship with their provider and connectivity to the clinic. This consumer focused outreach effort could provide very valuable information to the clinic about ways to improve customer service. While the strategies discussed above seem to address this recommendation, mothers may have other thoughts and opinions on this topic. A SWOT analysis for this recommendation is available in Table 21.

Table 21: SWOT Analysis of improved postpartum visit compliance by strengthening the continuity of care given by providers

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ The increased attention to mothers during their pregnancy that is inherent in several strategies could result in deeper relationships and more comprehensive and effective care overall. ▪ The P4 nurse midwife's time is already available and paid for through December 2009. ▪ MCC services are reimbursed by Medicaid. ▪ A variety of care coordinators are already involved with a cohort of high-risk 	<ul style="list-style-type: none"> ▪ Requires strong support and buy in from all the various stakeholders, particularly clinic staff. This may be difficult to achieve in the midst of such a busy, overscheduled clinic environment. ▪ Requires careful attention to scheduling. It may be very difficult to schedule a mother consistently with the same resident. ▪ Some mothers may end up seeing a provider they do not like more consistency. Mothers will need some way to express a preference for providers wherever possible.

<p>mothers served by both the faculty and resident clinics. These individuals are existing resources for mothers and have relationships with them.</p> <ul style="list-style-type: none"> Mothers may be less likely to miss scheduled appointments over the course of their care. It is likely that postpartum visit utilization will improve. With more consistent relationships with providers, the content of the visit may also improve. 	<ul style="list-style-type: none"> It is difficult to recruit bilingual health care providers. Some mothers may not be interested in having MCCs involved in their care. It will take time and effort on the part of the clinic staff and outlying clinics to effectively link all eligible mothers with MCCs. This will involve educating providers and staff alike about the MCC program. It will also involve close partnerships with local health departments at the state. There is not currently any funding for additional staff. Funding to continue the high-risk postpartum clinic, if successful, might also be required. There are costs to starting group prenatal care programs with space being a primary barrier. At this point in time, resources are very constrained at UNC.
<ul style="list-style-type: none"> The Centering Pregnancy™, high-risk postpartum clinic, and bilingual nurse offer ways to improve services while addressing clinic volume issues at the same time. Surveying mothers about their experience in the clinic could provide many insights and ideas for improving care. These changes could increase patient and provider satisfaction. 	<ul style="list-style-type: none"> Faculty and staff may not want to take the time necessary to build stronger relationships with their patients. They may be satisfied with the system as it is. There may be resistance from local health departments in providing MCC services to UNC patients. Even if they are eager to offer this care, there are many logistical and communication issues that will need to be carefully addressed. Hiring a bilingual nurse may be perceived as all that needs to be done to meet the needs of Hispanic patients. This is not true – hiring a bilingual staff person should only be part of a more integrated plan to serve these moms. Providers may not believe that models such as Centering Pregnancy™ are effective ways to offer care.

Opportunities

Threats

The SWOT analysis suggests that some of the strategies suggested would be easier than others to institute at UNC. Challenges include funding, scheduling logistics, difficulty in recruiting bilingual staff, buy in from administration, and faculty and staff interest investing the time needed to enhance continuity of care and relationship. There are also many factors that make implementation of some strategies relatively straightforward. Existing resources such as the P4 high-risk clinic, the MCC program, and care coordinators could easily be marshaled to support utilization of the postpartum visit. Conducting a survey of new mothers about the services they receive presents an opportunity only if clinic staff and faculty are willing to take the necessary steps to respond to any concerns that patients express. In the for profit service industry, customer focused care is central to business. While UNC is a nonprofit entity, it is still a business that should keep meeting patient needs and satisfaction as a baseline for its success. Providing care that is more “relational” in nature is one important way to help women bond with the UNC clinic staff and “brand”. This in turn may play a key role in influencing women’s choices about returning to the clinic for their postpartum care.

Recommendation #5: Improve the information that is available about mothers at the postpartum visit by adopting an electronic prenatal record

The most obvious and critical challenge at UNC in providing the postpartum visit is the fact that providers do not have adequate information about their patient at this clinical encounter. In general, it is common for providers to have their patient’s prenatal record in hand at the time of the postpartum visit. Unfortunately, this is not the case at UNC. As such, the richness of the information and history contained in the prenatal record is unavailable to clinicians. This makes it very difficult for them to individualize the postpartum visit.

Resident rotation compounds this problem as the physicians who provide postpartum care to a large cohort of mothers at UNC may not know them well or at all prior to the visit.

There are several options for addressing this information gap. First of all, logic would suggest that the system be modified to insure that the mothers' prenatal records are returned to the clinic prior to the visit. As such, providers would have her record available at the time of the visit. At UNC, this is complex, as it would require changing a number of other systems including hospital discharge summaries, the labor and delivery database, and billing. A second option includes speeding up the process by which the records are scanned into WebCIS. The quality of the scan, its legibility, and ease of access for busy clinicians may negate the benefit of having this information available.

A third more permanent and effective option to improve communication that can be accomplished at UNC is the development and adoption of an electronic prenatal medical record. Such a system would need to have the ability to a) allow communication among in-patient and out-patient staff, particularly nurses, and auxiliary providers such as care coordinators, genetic counselors, and psychiatric providers, b) flag patient health concerns and generate a list of women who need to be seen before six weeks postpartum, c) include a short patient profile highlighting key health or social concerns that would roll over with each screen to alert providers to specific patient needs or goals, and d) contain a postpartum template with required fields and automatic protocols for follow up for specific conditions.

Gregory and colleagues highlight the American College of Obstetrics and Gynecology support for a unified data set for information pertinent to women's health in general and pregnancy and childbirth in particular. They believe that electronic medical records have the potential to play an important role in the quality of maternity care.(53) In a

competitive health care environment, organizations with such records increase the speed with which they can conduct quality improvement projects. Within academic centers, electronic medical records can increase research opportunities by reducing the amount of time and cost of reviewing data pertinent to the question at hand.

The research results from this study implied that a fundamental step in improving the postpartum visit is to address problems in the area of communication about patients among providers. Without enhanced communication, it will be difficult to conduct quality improvement exercises. Communication failure, particularly for high-risk mothers and conditions, can lead to the greatest risk and liability as far as negative results of inadequate care. The electronic prenatal medical record would contain a number of features that could help alert providers about important health and social issues that should be followed up on at the postpartum visit. This could help prevent critical information about the woman from being lost in the postpartum information “shuffle”.

Over the past several years, a number of clinicians have been working to develop an electronic prenatal record that would be seamlessly linked with WebCIS, UNC’s hospital wide electronic database (described previously). This tool is rapidly growing at UNC with enhancements and upgrades becoming a common occurrence. Unfortunately, in September 2007, a one-year moratorium on new WebCIS projects was put forward. The WebCIS program was growing too quickly and was faced with a number of technical problems that needed to be resolved. The prenatal medical record project was given the first place on the priority list once the moratorium was lifted. This ban was removed in September 2008 thus allowing the prenatal medical records to move forward. They anticipate that the full record will roll out before the winter holidays. That may be a stretch, however, with a more realistic

roll out likely to take place in 2009. Table 22 provides a SWOT analysis for improving information at the postpartum visit by adopting an electronic prenatal record.

Table 22: SWOT Analysis of improving the information that is available about mothers at the postpartum visit by adopting an electronic prenatal record

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Can improve continuity of care by increasing the amount of information available about a patient across the system. ▪ Increase the speed of hospital discharge summaries. This in turn can improve relationships with referring providers and clinics. ▪ Increase the speed of billing. ▪ Improve the content of the postpartum visit by a) including a new template for the visit, b) alerting providers to necessary tests, c) allowing for tracking of key indicators such as utilization, and d) creating reminders for providing information such as the Taking Care of Me booklet to new mothers. ▪ Improve efficiency, save time, and money. ▪ Allow UNC to deliver more individualized, patient-focused postpartum visits. 	<ul style="list-style-type: none"> ▪ Funding depends on the Information Services Department (ISD), the School of Medicine, and the UNC Healthcare System. ▪ Implementation depends on ISD schedule. ▪ Capacity challenges with the WebCIS program. ▪ Uncertain if there is adequate commitment from the top leadership and adequate leadership time budgeted to spearhead roll out. ▪ Requires of energy, positive morale, and good will among the staff to implement. ▪ Cost savings in the future will cause the redundancy of two positions. However, these positions have historically been difficult to hire and keep filled. ▪ The EPMR alone won't improve care – the provider and system effect change.
<ul style="list-style-type: none"> ▪ EPMRs will open the door for new research projects and publications. This will also open the door for future research partnerships with other Schools and Departments at UNC and beyond. ▪ This will allow for the implementation of quality improvement initiatives by providing consistent and easy to access data about the content of care at UNC. ▪ This opens the door to a future dream of 	<ul style="list-style-type: none"> ▪ Duke University and other major medical centers already have an EPMR giving them a competitive edge in quality improvement and research. ▪ The UNC Children's Hospital has a new Center for Clinical Excellence. Even though this Center functions within the UNC system, it is still a competitive system with a focus on quality in a different Department.

linking in the 16 outlying public health clinics to the EPMR and thus to a new world of QI and research with a public health perspective.	
---	--

Opportunities

Threats

Steps underway now to develop this tool include sharing a model of the record with nurses and other staff to solicit input and troubleshoot potential challenges. Next steps should include training and then pilot testing of the record in a specific unit within the clinic or by a few faculty members. The rollout process should occur during a time when other competing initiatives and clinic activities are less present. For example, rollout should not occur in July when new interns, residents, fellows, and faculty join the team. It should also not occur when groups such as JACHO are visiting or are planning to visit.

The current leadership team for the electronic prenatal record includes two maternal fetal medicine specialists (one is the Division Director), a program manager from the Information Services Department (ISD), two physicians from Family Medicine (one is the Director), the Division Director of Nurse Midwifery, two OB/GYN residents, and the Medical Director of ISD. A public health nurse who coordinates care amongst UNC and its referring clinics has also been a member of this committee. Additions to this committee include nurse representatives from both the out-patient clinic and the postpartum in-patient floor. It should also include a member of the OB Generalists group (preferably the Division Director), and a maternal fetal medicine Fellow. Individuals who represent the Prenatal Genetics and the Center for Maternal and Infant Health should have some involvement as both of these groups provide care to OB patients. Expanding the team involved in the development of the record is important to be sure that all aspects of maternity care are addressed in the record – from the first prenatal care visit through the final postpartum visit. It is essential that the contents of the record reflect the kind of information required at each of

these health care encounters as well as linkages among the many professionals who interact with the mother over the course of prenatal and postpartum care.

The design of the prenatal medical record will take a problem-focused approach with the ability to pull data forward throughout the perinatal period. As such the information inputted during prenatal care would automatically populate the hospital admission, labor and delivery, and the discharge summary. The record would extend to 8 to 12 weeks postpartum to include the postpartum visit. Further, this record would have the capacity to link the mother's record with that of her infant. Having information available at the postpartum visit about the mother's infant is particularly important in cases where the birth outcome was not good. Being able to track all health care encounters and calls postpartum would generate additional information about maternal health needs, which could be applied to the postpartum visit. Having the woman's history of health risks or efforts such as smoking cessation would give providers the information they need to provide follow up directives and support.

The creation and implementation of the electronic prenatal medical record will be progressive over time. Over the course of its development, it will be possible to build in decision support mechanisms and automatic reminders to providers to attend to certain health issues or secure certain screenings. The integration of preventive health messages and public health campaigns will also be possible. Reminders to advise patients about postpartum multivitamin use and the distribution of health information such as the new mother packet (described below) can be automated.

There are many challenges to implementing such a system, including time, money, and buy in from all stakeholders. As seen above, it can take a long time to fully implement an electronic medical record. These records are not always easy to use and may be unpopular

with health care providers. Further, the record itself will not improve the postpartum visit. It is the provider and how he/she utilizes this tool that has the capacity to enhance this visit. There are three major cost areas for implementing electronic medical records: 1) template design and programming, 2) staff computers for inputting data, and 3) training and leadership. The UNC Information Services Department is currently providing support for the template design and programming. While many of the clinics already have computer access, any additional equipment will be paid for by Information Services Department with some potential investment required from the Department of OB/GYN. There will also be some initial clinic costs in terms of productivity. However, longer term, these costs will be repaid as efficiency is increased over time. It is also important that there is a physician leader who can spearhead this initiative. Negotiations will be required along with some salary support for a physician leader to actively engage in the logistics and training required for launching such an initiative. The ability of this provider to foster collaboration, attend to potentially competing needs and interests, and keep the process on task and moving forward will be essential to the success of this endeavor.

In the future, the hospital and department may realize cost savings once the prenatal medical records are programmed to automatically populate hospital discharge summaries. Currently, two staff abstract data from the paper record to populate the hospital discharge summary. One of these staff has to have a clinical nursing background. These staff will become redundant once the electronic record is fully operational. In light of the difficulty that has been faced in keeping these positions filled, this will be an additional benefit.

While there are costs for developing electronic medical records, the rewards may also be considerable. Having quick access to comprehensive data will increase the research

capacity of the OB/GYN Department and attract new funding for studies and quality improvement projects over time. Other institutions in North Carolina, including Duke University, already have electronic prenatal medical records. This has already given them a competitive edge in statewide projects such as 17 alpha hydroxyprogesterone caproate by giving them quick access to information about which of their patients were offered this treatment and how the treatment was delivered over time. They are also able to link the treatment with birth outcomes. This kind of data is highly desirable. UNC will need this level of rapid access to data if it is to remain competitive. The electronic prenatal medical record presents opportunity for quality improvement. It will act as an easier and less expensive mechanism for reviewing services delivered. Instead of abstracting paper charts, this database will simply need to be properly queried. This could allow for real time data and easier comparison of health issues such as GDM occurrence and GDM re-screening. Since the window of pregnancy is only 9 months and the window between pregnancies often no more than two years, there are opportunities in obstetrics to see the impact of preventive messages and improved care in a relatively short cycle of time. Further, the data could foster benchmarking and discussion around areas that are not performing per expectations.

Giving providers quick and detailed access to the information they need to personalize the care they offer at the postpartum visit is a very important way to strengthen this key clinical encounter. While finding a way to have the paper chart available at the postpartum visit would be cheaper and timelier, the electronic prenatal medical record is a better long run solution. In order for the postpartum visit to improve at UNC, providers need comprehensive information about the new mothers they see at this appointment. UNC should consider both a short-term and a long-term solution for this critical need.

Recommendation #6: Enhance the quality of the postpartum visit by implementing improvement initiatives

The chart review and informants signaled that there is room for improvement in the content of the care provided at the postpartum visit, particularly in regard to addressing specific health indicators and follow up screening protocol. The data suggest that the quality of the postpartum visit is not sufficiently adequate. Further, national standards and perceptions about this visit are changing, with growing calls for standardized screening for risks such as postpartum depression, anemia, and diabetes and more attention to utilization rates.

Quality improvement initiatives offer the opportunity to foster and institute change. While having an electronic prenatal medical record would facilitate quality improvement, there are steps that the Obstetric program should take to attend to some key issues regardless of having that system in place. Increased monitoring of key service indicators such as re-screening for gestational diabetes, hypertension, and anemia; smoking cessation counseling; and follow up for poor birth outcomes should be considered. Collecting baseline benchmarks for some of these indicators would likely draw attention to these services and provide an opportunity to study how well the clinic was doing in delivering this care. The data would then need to be translated into specific initiatives to address the content of care itself. The ability to focus on one specific process or indicator would be a workable solution to slowly build a strong postpartum screening, referral, and follow up program over time. Data collection for improvement initiatives could be designed to allow the clinic to review not only the quality of the care they provide but also the equity of that care.

One way to begin addressing quality improvements is to build a foundation upon protocols and algorithms for the medical and behavioral issues to be assessed and addressed at this visit. Once established and agreed upon, these protocols can guide practice and support quality improvement initiatives. An important place to begin is the development of a new postpartum visit template. The current template at UNC is not widely used, nor is it comprehensive. It has not been reviewed for a number of years and has not been discussed in light of the role of the postpartum visit in interconception health. While there are many factors that influence a clinical encounter, the variance in number of services received suggests a need for a more specific, widely adopted postpartum visit template with designated services that are to be completed for all patients.

The Maternal Fetal Medicine Division has developed over 40 algorithms over the past several years for the management of high-risk prenatal conditions. They are posted on the mombaby website and available free of charge. Some of these algorithms such as for gestational diabetes and anemia management may be used as starting points for discussion around postpartum protocols. While algorithms for topics such as screening/counseling patients who use tobacco, hypertension postpartum management, or follow up care for mothers who experienced preterm birth are not currently in place at UNC, there is ample information and professional recommendations available to allow for the relatively easy development of such algorithms. General algorithms could also be developed in regard to patient education and overall protocol for the postpartum visit. These would likely be more time consuming, but could also be done and should be done.

Once consensus has been reached on the postpartum visit template and related postpartum care algorithms, UNC could begin a series of quality improvement initiatives

aimed at addressing the clinic's ability to effectively implement the various protocols they have put in place. One way to do this is through rapid cycle quality improvement initiatives. The process for a rapid cycle of quality improvement would require several things. First, there would need to be clinical leadership for the initiative. They would need to identify which quality issues they want to address and then systematically work on their way down the list. Each issue would require a specific plan. Some components of this work are likely to include grand rounds or other teaching opportunities to disseminate information about the protocol to residents, staff, and faculty. The health care delivery system would need to be studied to determine how well it does or does not support this protocol. There are likely to be policy, teaching, and logistical issues that need to be resolved to support full implementation of the protocol. For example, although the finger stick method for anemia screening may have some accuracy issues, the process of sending patients to the lab for a venous puncture method test may inhibit screening efforts. So the method of any required testing and its cost should be considered. Benchmark data would need to be collected to be used for comparison at the end of the cycle.

Once the background work is done, the improvement process could follow the Plan, Do, Study, and Act model with a number of attempts to allow for the refinement of systems and training issues. This model is participatory and allows everyone involved in the change process to have input and buy in. If this model is used consistently over time, it may also help begin to change the culture of the OB program as it relates to continual quality improvement. The cycles can continue with the substitution of subsequent protocols once the clinic has successfully addressed its first project. It will be necessary to collect data after the new protocol has been in place for a while to determine if the effort has been successful in

changing practice. Table 23 offers a SWOT analysis for quality improvements around postpartum visit services and tests.

Table 23: SWOT Analysis for enhancing the quality of the postpartum visit by implementing improvement initiatives

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Addresses some content of care gaps uncovered in the chart reviews. ▪ Can start with specific clinical issues that fit within the clinicians' paradigm. ▪ Increases visibility of these issues. ▪ Should not increase costs of clinical care – additional tests should be accommodated under current reimbursement system. ▪ Should improve the care provided to women. ▪ Data could be collected that would help UNC assess the equity of its care – to determine if Hispanic mothers, African American mothers, and low-income mothers are receiving the same care as Caucasian mothers with private insurance. 	<ul style="list-style-type: none"> ▪ Need to still improve systems to address improved communication about patient's health status and needs prior to postpartum visit. ▪ The process of collecting benchmark data will be difficult to do without the electronic prenatal medical record. It could be very labor and time intensive. ▪ Improvement re screening and testing at the postpartum visit is important, but having the follow up resources for these patients is also critical. ▪ System issues are overlooked / not in the change model. The effort needed to modify certain systems is not taken fully into account. ▪ Strong leadership for quality improvement initiatives does not emerge.
<ul style="list-style-type: none"> ▪ Faculty, Fellows or even possibly Residents could take the lead on one particular issue. This supports the UNC mission component of "teaching." ▪ Models the quality improvement process – a skill that is growing in importance for clinicians. This could augment the learning experience for residents at UNC. ▪ Allows for clear markers of change and progress. ▪ Could involve the entire clinic team in achieving positive results. 	<ul style="list-style-type: none"> ▪ Constant turn over of residents requires that the improvement initiatives are incorporated into the teaching curriculum and reinforced / modeled well by faculty and clinic support staff. ▪ Lack of buy in and support from faculty, residents or staff. Arguments around the science behind the specific clinic protocols and process for quality improvements overshadow the goal of improving the quality of care. ▪ The development of the postpartum visit template and some algorithms may reveal a split between providers in their views as

<ul style="list-style-type: none"> ▪ Potential publications and projects for residents and fellows. ▪ Algorithms are already in use at UNC for a variety of prenatal conditions. As such, developing algorithms for various conditions during the postpartum period would be a natural off shoot of current work. Because the algorithms are posted online, they could also benefit the many obstetricians and clinics that link into those algorithms around the state and country. 	obstetricians as primary verses tertiary care providers.
Opportunities	Threats

There are a number of challenges to this recommendation. As described above, it will take time, consistency, diplomacy, and staff and faculty buy in to conduct successful quality improvement initiatives. Further, it will be difficult to improve the quality of care without first improving communication about the patient’s health status and needs prior to the postpartum visit. Additionally, systems issues must be considered in the context of problem diagnosis and change. These can be hard to change – sometimes even more difficult than provider practice. Finally, screening patients for conditions such as gestational diabetes and tobacco use is important. However, if patients screen positive, it is important to have follow up resources for these patients once the visit is complete.

On the other hand, quality improvement initiatives fit within the provider’s paradigm when focused on specific clinical interventions. They can increase the visibility of gaps in postpartum visit care and provide a framework for closing them. Such initiatives offer multiple opportunities for teaching, something that is important in an academic learning environment. Using a continuous cycle of improvement has the potential to begin to shift the culture within the OB program. This framework for change could allow for many different

initiatives that could begin to significantly upgrade the content of the postpartum visit at UNC. The development of a postpartum visit template alone would allow for extensive dialogue about the content of care provided at this encounter. Attention to the components of the postpartum visit both specific to certain conditions and populations as well as general for all mothers would be an important step toward improving care.

Recommendation #7: Expand the information mothers receive by increasing the number of educational resources they receive at the postpartum visit

While the content of the postpartum visit at UNC may be difficult to modify, more could be done to increase patient access to postpartum information about topics such as family planning, coping, and nutrition. This could be done by giving all new mothers an information packet at their postpartum visit, similar to the way in which newly pregnant mothers receive a packet of information at their first clinic visit. The packets could be given to mothers when they check in for their postpartum visit. Packets would have to be available in English and Spanish. Receiving a “gift” from the clinic at the postpartum visit might make mothers feel special at the same time that it puts valuable information into their hands.

The contents of the packet need to be carefully considered and reviewed by clinic staff. One important product to include would be the *Taking Care of Me* magazine, which focuses on health and wellness for mothers. The magazine is colorful and available free of charge through the North Carolina Healthy Start Foundation. A version of the booklet is also available in Spanish. This magazine covers a number of very important topics including: depression, contraceptives, the menstrual cycle, alcohol and cigarette use, vitamins, breast exams, and health eating. The magazine also includes a chart for mothers to track their exercise and dietary intake. Information from the North Carolina Folic Acid Campaign

should be added to reinforce the importance of vitamin supplementation. The *Congratulations, Mom You Have a Beautiful Baby* booklet would be very appropriate for this audience and is available for free in English and Spanish. The campaign always has one “reminder” item available free of charge. These include: nail files, key chains, and chapstick. Adding one of these items to the packet would be easy to do. The packet could also contain information about the North Carolina Eat Smart Move More campaign with a special fact sheet about weight loss and exercise for new mothers. A web card or photo magnet for the www.mombaby.org website could also be included. While not all mothers have access to the internet, for those who do the information listed on that site may be very helpful.

Mothers with Medicaid for Pregnant Women and/or who are Uninsured could receive additional information. This could include the *Be Smart Family Planning Waiver* brochure, information about WIC services, information about the Family Resource Line, and other care available for women through local public health clinics. Because six weeks may also represent a time of peak crying and SIDS risk, the clinic might also consider including free state materials for all mothers on shaken baby syndrome and SIDS/Safe Sleep. There may be other items available free of charge or low-cost that clinic staff would also like to include. Again, the packets would need to be available for both English and Spanish speaking mothers.

In addition to the packets, each consult unit or check-in area could be equipped with easily accessible booklets that could be given to mothers based on their specific needs. This could include items on topics such as second hand smoke exposure, breastfeeding the older baby, stress management, family planning, diabetes and high blood pressure management, recurring preterm birth prevention through 17 alpha hydroxyprogesterone caproate (17P), the

March of Dimes Neonatal Intensive Care Nursery Parent share network, and smoking cessation for new mothers. Fact sheets on specific contraceptive methods could also be available. Information sheets about local health departments and community clinics could also be in the pod.

Another way to increase mothers' access to information, would be to augment the content of material available on the Center for Maternal and Infant Health's website, www.mombaby.org. Links to that new mother information section should then be established on a number of websites at the hospital to connect new mothers with this information more easily. Nelson and O'Reilly both support the utility of developing a website for new mothers to hold comprehensive information on the transition to motherhood with a focus on different populations of mothers – first time, second time, older, and so forth. They suggest that mothers have difficulty absorbing information during the early weeks postpartum and that having such a resource will allow them the chance to go back and review information given to them. It is also a way to help women feel connected and nurtured – particularly if they can read information tailored specifically to their needs and experience.(81, 82) Adding the opportunity to connect with other mothers online offers a different way for some mothers to connect, particularly mothers with infants who may be preterm and unable to be taken in public.

The cost of distributing information packets and augmenting the information available to new mothers would be very low. The majority of the items described above are available free of charge. There would be time and effort involved to order all the products mentioned. Plastic bags of some kind would need to be purchased or donated to hold the items. In the future, grant funding or other support may even allow the clinic to purchase gift

items such as pedometers (\$1.80/each for bulk quantities) or other items to encourage weight loss and exercise. The Center for Maternal and Infant Health could take the lead in compiling two sample packets – one in English and the other in Spanish. The contents of the packets could then be reviewed by a number of clinic leaders and stakeholders. Once everyone agreed on the content, the Center could order enough items to compile an initial box of packets. A description of the items in the packets and contact information for where they can be ordered would be compiled. One key informant said that the clinic has a number of people who volunteer from time to time. She felt that they could take the initiative to compile the packets either monthly or quarterly. The Center for Maternal and Infant Health or the front desk staff could serve as a default mechanism to make sure the packets are complete. A SWOT analysis for this initiative is described in Table 24.

Table 24: SWOT Analysis for expanding the information mothers receive by increasing the number of educational resources they receive at the postpartum visit

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Increase information available to new mothers thus improving their knowledge and access to resources. ▪ Supports the interest on the part of providers to have additional information available to mothers. ▪ Information could improve the clinical encounter. ▪ Materials such as the <i>Taking Care of Me</i> booklet or information packet could be given to mothers at clinic check in. This would put the responsibility for distribution on the administrative staff not the clinical staff. It also might make productive use of waiting time. ▪ The cost is reasonable and achievable. There 	<ul style="list-style-type: none"> ▪ Staff responsibility for keeping materials stocked in both languages. ▪ A system needs to be put in place in insure that the materials will be distributed to mothers. ▪ The materials might be viewed as sufficient to address the postpartum issue when in fact their impact is lower than other efforts that could be pursued, such as a postpartum clinic and quality improvement. ▪ Providers still will forget or decide not to use the materials or address the issues. ▪ Materials will need to be reviewed periodically for accuracy and content.

<p>are already existing materials in North Carolina that are available free of charge.</p> <ul style="list-style-type: none"> ▪ Mothers would have information in hand to reference after the visit. 	
<ul style="list-style-type: none"> ▪ There may be pharmaceutical or other companies who might be interested in supporting the production of these gift/information bags. ▪ Nurses and other staff could prompt conversation about the information in the booklet during their initial encounter time with the patient. ▪ Clinicians would be asked to review and approve the contents of the packet – this will familiarize them with these products. ▪ Will provide women with access to potential resources and referrals that are not currently being offered. This can also make the visit more attractive and noteworthy. 	<ul style="list-style-type: none"> ▪ Competing priorities within the clinic and among stakeholders might relinquish this effort to the back burner. ▪ May be difficult to institute and support over time. ▪ Materials would need to be available in formats that are culturally and linguistically appropriate for a diverse patient population. ▪ Not all mothers can read or will have the time to read the materials. Some materials may not be available for a low literacy audience. ▪ Materials in Spanish may not be culturally appropriate. ▪ Mothers may prefer materials in a different format, such as DVD, that is not available.

Opportunities

Threats

There are a number of challenges to this initiative. While the packets will increase access to health information for many mothers, written information is only one way that people learn. It is likely that mothers who can't read or who don't like to read will not be able to take advantage of this information. There are also issues around maintaining packets and distribution over time. It will require an investment of time and interest on the part of a staff leader to insure that this continues.

The impact on the overall quality of the care provided is also not likely to be influenced by the packets. However, some of the items in the packet might prompt a conversation during the visit. Further, having relevant, specific information in the modules may be helpful for providers in the clinic encounter. Online resources may be very useful for new mothers who want more detailed and comprehensive information than they may have received during their visit. Augmenting the information women receive is a good and necessary auxiliary to the postpartum visit. Overall, having this information available to mothers at the postpartum visit will provide them with resources to help them enhance their health and well-being.

Recommendation #8: Link low-income mothers back to local health departments and community clinics

A major issue identified in the study was a lack of follow up and referral of mothers after the postpartum visit. Many mothers are not currently leaving their postpartum visit with a clear discharge plan. They may not know where they will go for future health care and social needs. This gap was particularly pronounced around the issue of family planning. Mothers often received some kind of contraceptive method, such as a shot of Depo Prevara, but left the clinic without a specific plan for what they would do when their contraceptive pills ran out or they needed their next Depo shot. As a result, these mothers often arrive at their local family planning clinic without records or information about the care they received at UNC. This in turn may increase their wait times or costs. Overall, the population the most affected appears to be low-income mothers who receive care in the resident clinic. This issue is clearly reflected in the tension that exists between obstetric providers who view themselves as women's health primary providers and those who do not. It is also reflected in the

improved continuity of care and relationship that faculty have with their patients as compared to that of the residents. More importantly, it reflects a missed opportunity for the postpartum visit to serve as a gateway to women's wellness. If mothers are uncertain as to their future health care needs options for service, they may not receive preventive care until they are pregnant again.

In light of the goal to use the postpartum visit as a transition to women's wellness, insuring that mothers have a plan for where they will receive this continuing care is foundational to this effort. Low-income mothers often leave their postpartum visit and are not heard from or seen again. Where they go and how they receive follow up services is generally unknown. This represents a poor hand off on the part of UNC and a disservice to these mothers. Many low-income mothers may have access to services such as WIC as well as ongoing family planning services from a local public health or community clinic. Further, these mothers could benefit from information about safety net providers who might be able to help them manage chronic, medical and social conditions or simply be available to meet their primary care health demands. This may be particularly important for mothers who received their prenatal care at UNC because they had high-risk pregnancies and could not be seen at a more local clinic. Proactively promoting continuity of care for low-income mothers by linking them back to their local health departments or community clinics at the postpartum visit is a way to improve the ability of the postpartum visit to move women forward in their care continuum. Corrarino and Moos wrote that local health departments not only provide quality care, they extend care to address social, nutritional, psychological risks. (95) Providing mothers with information about the quality of care and types of services offered at local health departments and community clinics is a step toward continuity of care that can

not be neglected. While the focus for this recommendation is on low-income mothers, all mothers in the clinic should have a plan as to where they will get their care now that their pregnancy is complete.

Services offered by health departments and clinics vary widely. Some offer a very comprehensive array of services ranging from family planning to healthy life style classes. Others offer more basic care such as family planning, well-baby visits, WIC, and sexually transmitted infection screening and treatment. Some are particularly well prepared to serve patients who speak Spanish. Community health clinics offer primary health care for people of all ages. Similar to UNC, these safety net providers have busy clinics as they work to serve a growing number of Uninsured families and an increasing Hispanic population.

Making these referrals back to local clinics should be straightforward to achieve. UNC already has a good relationship with its 16 outlying clinics. There is a long history of leadership from the Division of Maternal Fetal Medicine and the NC Division of Public Health in building and supporting linkages between high-risk tertiary clinics and referring clinics. Recently, funding for the public health maternity coordinator position was included in the UNC Healthcare System budget. The nurse in this position facilitates smooth communication between the clinics and UNC in regard to patient care and hospital policy for low-income pregnant women. With this relationship in place, discussions could be held with outlying clinics to develop a formal referral process for postpartum care beyond the six to eight-week visit, this time from UNC to the partner clinics. This is particularly important for low-income mothers who could take advantage of the NC Family Planning Waiver. Clinic staff could share information with mothers about local family planning clinics at their postpartum visit. They could then fax a copy of the postpartum visit notes along with specific

information about the woman’s family planning method directly to her clinic of choice. This would close an important loop for many women. Fact sheets about each of the different outlying clinics could be developed and given to mothers at the visit. The fact sheets would include available services, clinic hours, location, and phone numbers. A sample fact sheet in English is included in Appendix E. The information should be prepared in English and Spanish. It is likely that some of the clinics already have materials about their services they deliver. A SWOT analysis for this recommendation is described in Table 25.

Table 25: SWOT Analysis for linking low-income mothers back to local health departments and community clinics

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Better connect low-income mothers with additional resources such as food stamps, breastfeeding support, immunizations, and well-child care, identified needs at the postpartum visit. ▪ Mothers who speak Spanish are less likely to receive services that are linguistically and culturally appropriate. ▪ Build and strengthen relationships with local clinics. 	<ul style="list-style-type: none"> ▪ Not all mothers may choose to get care locally. Some mothers may have perceptions about health departments that are inaccurate. ▪ Mothers will be polite and accept the referral but not attend the visit. There is no mechanism for follow up. ▪ Providers will not take the time to talk with the patient about referrals and/or won’t take the time to fax the information to the clinic. ▪ Better referrals do not necessarily mean that women will receive better health care.
<ul style="list-style-type: none"> ▪ Increase the likelihood that mothers will be able to space and plan future pregnancies. ▪ Reduce the likelihood that mothers will utilize the emergency room for primary care. ▪ Improve clinic flow and function for local clinics by proactively providing them with needed patient information. ▪ Potentially increase the knowledge of faculty, residents and nurses about 	<ul style="list-style-type: none"> ▪ Outlying clinics might perceive the referrals as an imposition. They might perceive UNC as “dumping” patients back in their care. ▪ Patients may perceive that UNC is “rejecting” them. ▪ Local clinics will not have the capacity to serve the mothers and/or to treat their conditions. ▪ Low-income patients with ongoing serious health concerns should still be referred to specialists at UNC using the charity care

available public health services.	<p>option.</p> <ul style="list-style-type: none"> ▪ Information given out about the clinics becomes outdated or inaccurate over time. ▪ Referrals back to local care for mothers suffering from postpartum depression should be done carefully and completely. It may be difficult to find local services. Mothers may also need additional support and encouragement to follow up on referrals.
-----------------------------------	--

Opportunities

Threats

While asking mothers about their plans for follow up care appears to be straightforward, providers must be prepared to assist women who do not know where to go. This conversation may be complex depending on the patient's income, place of residence, and health care needs. Based on the provider survey, there is a large cohort of women who look to the Obstetric program for their primary care. The issue of linking women to medical homes as part of a postpartum discharge plan brings existing conflicts regarding obstetrical care providers' perceptions of their role in the delivery of primary care to the forefront. Some providers may consider themselves to be the primary provider for their patients and embrace this role. The faculty in the Women's Primary Health Division of the OB/GYN Department and nurse practitioners in the Department may be the most likely to feel this way. These faculty members are also more likely to care for patients with private insurance. Residents may perceive that their patients see them as primary care providers, but they do not necessarily connect with this role. Based on key informant interviews, administrators in the Department do not see the OB program's role as primary care providers. This recommendation provides the opportunity for frank discussion about the OB program's role in providing interconception care for mothers. It also offers an opportunity for UNC to act

proactively to connect mothers with needed services as they complete their cycle of maternity care.

One challenge to this recommendation focuses on referrals. According to the data collected in this study, providers do not often refer women to other services, and when they do they are only somewhat confident that their patients follow up on their referral. One informant noted that she felt good about writing referrals to colleagues in the OB/GYN Department for follow up care because she knew the patient would be in good hands. She expressed less confidence for other referrals because she did not have a relationship with them.

To address some of these concerns, extra steps could be taken to further strengthen the ties between UNC and the outlying clinics. Leadership for this relationship building could come from the new Public Health Maternity Coordinator (PHMC) with support from clinic nursing leadership. Thanks to the skillful relationship building, outreach, and problem-solving done by the first nurse practitioner who served in the PHMC role, the new PHMC has a strong foundation of trust from which to work. Representatives from the outlying clinics attend meetings at UNC several times a year. This issue of back referrals for well-woman care and other services should first be presented at this meeting. As such, the local clinics could offer their feedback and thoughts on this initiative. One meeting might also be done as a meal to which residents and faculty were invited to come and introduce themselves to local teams. Later, the PHMC could give a presentation to the clinic staff and residents, maybe even Grand Rounds, detailing the kinds of services available to low-income women through these clinics. She could also talk briefly about some of the challenges faced in these local clinics particularly in providing family planning, sexually transmitted infection

screening/treatment, and prenatal care. She could conclude with suggestions for ways the UNC clinics could most effectively support transitioning some patients back to this care. The www.mombaby.org website currently has a section for outlying clinics detailing UNC policies and procedures. A similar section might be added to the site to reflect the local clinic policies and procedures for providing care to low-income families.

While the outlying clinics have a stronger link to UNC because of the work past and present of the public health maternity coordinator function, there is more that needs to be done to build truly reciprocal relationships among these groups. Providers at UNC, particularly residents, may not fully understand the role of public health in addressing maternal and child health. Further, conversations with clinics tend to focus on the current interchanges between UNC and local care on issues very specific to high-risk prenatal care and labor and delivery. Discussion about referrals back to local clinics after the postpartum visit would be different than the discussions that may have taken place in the past. Further, it is likely that residents and some faculty may not truly understand the kind of care available to mothers at public health departments or community clinics.

In order to implement this recommendation, it will be important that both the referring and receiving clinics have systems in place that will smoothly and cost effectively bridge care for mothers. Tracking should be put in place with at least a note in WebCIS to account for where women decided to go for their family planning care. Irrespective of where care is to be given, it is important that mothers also have information about accessing care outside of the obstetric program. Having information readily available for all patients about local care or UNC options, in English and Spanish, would be a good step to take in helping women think ahead about their future health care needs.

The cost for this effort would be low. Some material might need to be developed and printed about the local or UNC available care. There might be some expense for a meal or meetings for local clinic representatives. The larger expense would be the time taken by the clinic nurses and providers to give this information to patients and insure that relevant information about the patient is faxed to her provider of choice. The best practice care would entail time given on the part of the provider to insure that the woman followed up on the referral given. While this may be difficult to do for all women, there should be discussion about follow up measures for mothers with special needs including: women who are obese, have high blood pressure, are trying to stay smoke-free, screen positive for postpartum depression, and have social risks such as domestic violence. Leadership for this initiative is very important to insure that the referrals actually take place. Without the provision of additional resources or time to staff for this initiative, it will be necessary for this work to fall into someone's job description. Helping mothers plan for their future care is a component of interconception care. If the purpose of the postpartum visit is to serve as a transition for women to wellness care, it is important to insure that she has the information she needs to obtain appropriate care in the years to come.

Discussion

Richmond and Kotelchuck have proposed a three-factor approach to health policy. They suggest that in order to move maternal and child health policy forward it is necessary to develop a knowledge base, political will, and a social strategy. The recommendations described in this chapter, combined with several other elements of this dissertation, address each of these elements for change as they relate to the postpartum visit.(149) The literature review described in Chapter Two provided a credible argument for improved postpartum care

for new mothers. The proposed development of a research consortium in recommendation two will further expand this knowledge base. The remaining recommendations propose social strategies for improving the postpartum visit at UNC. These recommendations offer a blueprint for changing the current status quo care for mothers at UNC. The development of an integrated interconception initiative would serve to offer strong leadership and provide a framework for this work.

One additional social strategy not specified in the recommendations is educating health care providers about the postpartum visit. While quality improvement initiatives and research projects in the UNC OB/GYN program will expose faculty, staff, and residents to new information about elements of the postpartum visit, it may not be enough. The curriculum in the Schools of Nursing, Medicine, and Public Health should incorporate more information about the postpartum visit, maternal health needs, and interconception health into their curriculum. They should also include questions about the care that should be provided at this visit in key examinations and certifications.

Political will is a third, key area for change. This paper addressed several important pressure points for change in its discussion about National and State Issues in Chapter Seven. The National CDC Preconception Health Recommendations channel the work of a Select Panel of National Experts on this topic, setting the tone for new conversations in maternal and infant health. The growing support of groups such as the North Carolina Child Fatality Task Force, the North Carolina Institute of Medicine, and the NC Justice Coalition for expanded access to Medicaid for high-risk new mothers may also prompt the development of new programs and services. Internal pressure from Dean's Office and/or from the leaders of

an interconception initiative may also be exerted to encourage the implementation of the social strategies and the pursuit of expanded knowledge.

Bringing mothers' voices into the equation may be the most persuasive tool for effecting change and political will. Anecdotal evidence suggests that mothers served in both the resident and faculty clinics may not be fully satisfied with the postpartum visit they receive. Some mothers in the faculty clinic have complained that their providers didn't know them during the postpartum visit and that they felt it was a waste of time. Others felt the visit was very anticlimactic. Another mother said she was unable to be seen in the clinic during her first week postpartum even though her blood pressure was very high and she had been hospitalized during her pregnancy. Since the postpartum visit is the final impression mothers have of UNC this is an important consideration. Augmenting this dissertation research by conducting a comprehensive, thoughtful survey of mothers following their postpartum visit might be the impetus for change that is needed. The data itself demonstrating women's unmet needs and the impact of those needs on the health of mothers and babies in North Carolina, should be the final clarion call.

The Change Process

Engaging in change is a process that takes time, perseverance, and strategic planning. In addition to the planning required for each separate recommendation and a carefully orchestrated roll out of the initiatives, leadership, timing and funding also come into play. The process followed by Merry-K Moos in implementing the postpartum depression screening tool and resources offers a blueprint for one way to effect positive system change in the Obstetric Program. To begin, she built strategic partnerships based on evidence-based best practice around a topic that impacts a large number of women. The topic selected also

held potential liability issues for the clinic should a patient not receive screening and later cause harm to herself or her newborn. Ms. Moos educated staff on the use of the tool, addressed system issues to be sure the tool would be used, and partnered with a different department to bridge new resources to the clinic. This intervention also seems to have the potential to stand the test of time by remaining in place over several academic years and leadership changes. While there is still work to be done to insure that scores are recorded in the patient's note and that the referral process is a warm one not a message on an answer machine, this project is a success. Further, having this screening in place sets the UNC Obstetric program as leaders when compared to other institutions that have not rallied the resources to address this problem in this manner. While each improvement initiative will be different and the leadership for this initiative has transitioned somewhat out of her clinic role, this change model is one that was effective and should be utilized where possible in instituting other change in the future at UNC.

Another team-focused approach to change is the Plan Do Study Act cycle, best described in the Improvement Guide by Langley, Nolan, Nolan, Norman and Provost. As mentioned in Chapter Three, this model uses a cycle approach for turning ideas into action and then for connecting action to learning. This model is team-based model and engages a variety of people in the change process. Essentially, this cycle allows for time to plan for an initiative by setting an objective, making predictions about what will happen, and developing a way to carry out the initiative focusing on the who, what, where, and when. The next phase is the opportunity to test the initiative by implementing the change and then documenting the problems and unexpected observations. The team then studies what happens, summarizing what was learned, comparing their notes and data to their predictions, and analyzing what

happened. They then decide what changes are to be made and begin a new cycle. (147) An abbreviated version of this process could be modeled in the implementation of the recommendations around the distribution of the postpartum visit booklet and information packets. As staff become comfortable with this model.

Summary

The UNC Obstetric Program is comprised of a large and diverse group of administrators, faculty, residents, staff, and partners who are committed to caring for a large population of pregnant women. Their willingness to participate in a research project about the postpartum visit and to freely offer their opinions and ideas is reflective of the positive culture of the Department and the spirit in which they serve their patients. The study findings suggested that there are several areas where UNC is doing a good job in providing basic postpartum care and services. Their utilization rates for privately insured and Medicaid patients are higher than the figures reported by HEDIS and other national estimates, although still lower than they should be. They have a strong program in place to screen women for postpartum depression and offer them mental health care during and after pregnancy. They have also worked to make long acting reversible contraceptives available to their low-income mothers. The program and the hospital have invested in a public health maternity coordinator position to facilitate communication with 16 outlying public health and community-based clinics. Grant funds from the Dean's Office in the School of Medicine and the March of Dimes have been received to promote interconception care for high-risk mothers. There are many important and foundational elements in place to support expanded care and innovative projects on this topic at UNC.

This research also found that there is opportunity at UNC to markedly improve the care provided during the postpartum visit. Certain populations of patients are less likely to receive a postpartum visit and when they do receive a visit they receive fewer services than other mothers. The content of the visit is variable and not as complete as it could or should be. Postpartum screening for conditions such as gestational diabetes and hypertension are inadequate and warrant further attention. There are variances in care between the faculty and resident clinics. Communication among providers is incomplete, with a major barrier presented by the lack of access to the prenatal record at the postpartum visit. Low-income mothers are likely to leave their postpartum visit without a plan in place for follow up services or contraceptive care.

Information collected from key informants and health care providers suggests that there are numerous modifications that could be put in place at UNC to improve the postpartum visit, from which I derived eight key interventions. These range from the high cost idea of improving the information available about mothers at the postpartum visit by adopting an electronic prenatal medical record, to low cost recommendations of marketing the postpartum visit to mothers and expanding the information mothers receive at the postpartum visit by increasing the number of free educational resources they receive. The most visible and foundational interventions proposed include developing a major, comprehensive interconception care initiative and a University-wide research consortium. Several interventions target clinic function by improving postpartum visit compliance by strengthening the continuity of care given by providers and enhancing the quality of the postpartum visit by implementing quality improvement initiatives. Finally, this paper proposes that mothers should be transitioned out of the postpartum visit into a plan for

ongoing well woman care. For low-income mothers, local health departments and community clinics offer the potential to serve as medical homes and sources of preventive care.

In order to deliver excellent care, providers need tools to do their work well. These include: current and complete information about their patient, systems in place that support screening for disease, adequate time to spend with their patient, resources and patient health information readily available, good referral sources and contacts, and patients prepared for the visit. The recommendations in this study are intended to support providers in the clinic in achieving their goals of leading, teaching, and caring. This research also suggests that the postpartum visit is relational and should be built on a solid foundation of good, mentoring, supportive prenatal care where the providers know the patient and the patient trusts the provider. This is the kind of environment that creates fertile ground for the exchange of health information and a true movement toward wellness. Instead of allowing women to fall out of the system at the close of their postpartum visit, steps should be taken to be sure they are connected to care for their next reproductive phase and equipped with the knowledge they need about what their next steps should entail. The postpartum visit is part of a continuum of care.

Final Word

Walker summarizes the importance of the topic of this dissertation by noting that “whether such innovations are offered in maternal-child health programs, women’s health services, pediatric care, primary care or obstetric services, it is clear that more needs to be done to promote the health of women after childbirth. In raising the issue of maternal health to greater visibility, health care providers can begin the process of redressing its neglect.”(2)

The research for this paper determined that there are many things that could be done within the UNC Obstetric Clinic to improve the postpartum visit and the care new mothers receive. The work also found the staff and faculty at UNC willing to begin to address service gaps and augment the preventive care new mothers receive.

The literature review and data also concluded that new mothers need more services than a single visit can provide to address their bio psycho social needs. Lu and Prentice suggest that “to expect postpartum care, in a single, short visit, to change health behaviors that may have been patterned by a multitude of psychological and social factors may be expecting too much of the postpartum visit.” They call, as does this paper, for further research and evaluation of the timing, content and delivery of the postpartum visit.(7) While the focus of this paper was on the postpartum visit, it is clear that there is a national need to broaden our current paradigm of maternal and infant health. Women’s health before pregnancy, intentionality towards pregnancy, and holistic care after becoming a mother deserves greater recognition and fiscal investment. While a single visit can not hope to accomplish all of these goals, it is an important and logical place to begin the journey.

APPENDIX A

The Postpartum Visit: A Missed Opportunity for Prevention Patient Chart Review Codebook

Study Identifier # The PI will assign a study identifier for each chart to be reviewed. This number is to be recorded in the first column.

Data Abstractor: Abstractors are to write their initials next to the completed charts on the Master List. Quality Check: If Merry-K Moos has reviewed this chart for accuracy of abstraction, she will place her initials here.

The chart below provides the name of each variable and its ID, a full description of the data to be abstracted and the code to be entered into the data chart.

Variable	Description / Code	Comments
Patient Characteristics		
P1. Age	Age in years	Listed in demographic data – double check on L&D record – we want the age she was at delivery
P2. Marital Status	Married – M Single – S Divorced – D Separated - Sp Other - O	L&D Discharge summary
P3. Race	White – W Black – B Hispanic – H Asian – A Native American – N Asian Indian – AI Middle-eastern – M Bi-racial – B Unspecified - U	Demographic data and/or L&D Discharge Summary. If race isn't noted in the demo data, check in L&D
P4. City / County of Residence	Name of City Name of County	If you see any county/city that is from a distance (ie beyond Alamance, Orange, Durham, Wake, Chatham) double check to be sure they were not a transfer prenatal patient.
P5. Payment Source	Medicaid – M BCBS – B Private - P State Employee Plan – S Uninsured / Self Pay – U Presumptive Medicaid – PM Tricare – T Other Private – O	Demographic data

Previous OB History P6a - Preterm P6b – Spon Abortion P6c – Thera Abortion P6d – Elective Ab P6e - Abortion P6f - Fetal/Infant Demise P6g - Living	# births # spontaneous abortions # therapeutic abortions # elected abortions # abortions reasons unknown # demises # living	Numbers include previous pregnancies NOT outcome of current pregnancy. L&D Discharge Summary
Utilization		
U1. Prenatal Care Clinic Site	Faculty at CH North - FN Faculty at UNC - F Residents - R	May be difficult to differentiate between FN and F. When in doubt put F
U2. Date of Delivery	DD/MM/YEAR	Abstract Form OR L&D Discharge Summary
U3. Date of Postpartum Visit	Yes or No	PP Visit Note
U4. Received a postpartum visit	Yes or No	If no visit for patient, collect birth outcomes and health information prior to PP visit. If no – confirm in A2K that appointment was not provided. Write medical record # on A2K sheet.
U5. Postpartum Visit Provider Background	Maternal Fetal Medicine – MFM Maternal Fetal Medicine Fellow – MFMF Obstetrician – OB Certified Nurse Midwife – CNM Resident – R Nurse Practitioner – NP	See list below identifying providers by name. Name will not be typed into the database but this will allow for correct identification of the provider's background.
U6. Received additional visits after hospital discharge up until 12 months postpartum	Open – type in yes or no and if yes then describe purpose of visit	Women with C-sections should have a 2 week visit scheduled. Women with hypertension should have 2 week BP check. Look in visits or reports. Record anything up to one year postpartum
Birth Outcome		

B1. C-section	Yes or No	L&D Discharge Summary
B2. Delivery Complications	Select from the following: no, lacerations, hemorrhage, infant problem, serious maternal complication (eg stroke), more than one	Determined by L&D record in section under complications.
B3. Well Infant	Yes if Infant is considered healthy and normal No if Infant has problem. If No describe:	Infant may be health and still have an issue noted below.
B3a - Preterm birth	Select from pull down list	Select all that apply 32-36-weeks gestation / 28-31 weeks / less than 27 weeks
B3b – Demise	Select from pull down list	stillbirth/IUFD or neonatal death (prior to 28 days of life) or infant death or type unspecified
B3c - Congenital Anomaly	Yes or No	
B3d - Other	Select from pull down list	LBW (defined as less than 2500 grams) or macrosomia (more than 4500 grams) or possible anomaly or delivery complications or meconium or other complication
Women's Health / Risk Factors		
W1. Postpartum Weight	Weight recorded at postpartum visit	PP Visit Note No need to write the actual lb sign
W2. Height	Height recorded at postpartum visit or in the HNP	
W3. Weight	<ul style="list-style-type: none"> Underweight below 18.5 - U Normal weight 18.5-24.9 - N Overweight 25-29.9 - O Obese BMI of 30 or greater – OB Don't Know - DK <p>Did the provider acknowledge/discuss the patient's weight: Yes, No, No PPV, No PPNote</p>	PPV note, L&D Discharge Summary, additional PP visit notes, or history/physical file from around the time of delivery or postpartum visit. If they write "obese" in the chart then assume it is a BMI of over 30. Use BMI as guidelines if needed.
W3a Weight discussed		
W4 Blood Pressure Check	normal, borderline, high, very high, not noted	See clinic sheet for values. To be drawn from the PP record OR an early PP visit
W5 Anemia at Discharge	Yes, No, DK	L&D Discharge Summary Labs Section

W5a PP Retest	Yes, No, NA, NoPPV, NoPPnote	Hemoglobin/hematocrit tested
W5b Anemia Plan	Yes, No, NA, NoPPV, NoPPnote	Note – if the patient was anemic per the two lab screens done during pregnancy and reported in the L&D labs section, note prenatal anemia in the “other health conditions” section.
W6 Diabetes (pre-existing)	Yes, No, DK	Review L&D Discharge Summary – check labs section
W6a – Diabetes Follow Up	Yes, No, NA, No PPV, No PPnote	If response to first is DK then FU should be “no”
W7 Diabetes – Gestational	Yes, no, DK	Review L&D Discharge Summary – check labs section
W7a – Challenge Done	Yes, No, NA, No PPV, No PPnote	If response to first is DK then FU should be “no”
W7b – GDM Plan	Yes, No, NA, No PPV, No PPnote	
W8 Hypertension (pre-existing)	Yes, No, DK	Review L&D Discharge for presence of hypertension. PP note will contain information for a and b.
W8a HT Noted	Yes, No, NA, NoPPV, NoPPnote	If response to first is DK then FU should be “no”
W8b HT Plan	Yes, No, NA, NoPPV, NoPPnote	
W9 Hypertension – Pregnancy Induced	Yes, No, DK	Review L&D Discharge for presence of hypertension. PP note will contain information for a.
W9a BP Plan	Yes, No, NA, NoPPV, NoPPnote	If response to first is DK then FU should be “no”
		If she has chronic HT don’t mark this box unless pregnancy-induced hypertension is also specified in the records
W10 Poor Birth Outcomes	Select from: etiology, spacing, genetics, referral to specialists, two items, three items, all items, NA, NoPPV, No PP note, no	Birth outcome should be in L&D Discharge Summary. The rest of the information should be in the PP visit note or an MFM visit within a few months of delivery.
W10a Risk Reduction	Yes, No, NA, NoPPV, NoPPnote	Any reference to a specific plan to help mother reduce risks
W11 Asked about Family Violence	Yes, No, NoPPV, NoPPnote	Postpartum Visit Note – also look for notes from social work
W12 Substance Use	Select from no, DK, tobacco, alcohol, cocaine, marijuana, other,	L&D Discharge Summary – look for notes from social work

W12a SU Asked	polysubstance Yes, No, NA, NoPPV, NoPPnote	PP Visit Note If response to first is DK then FU should be “no”
W12b SU Plan	Yes, No, NA, NoPPV, NoPPnote	
W12c SU Source	L&D, PPnote, other record, multiple sources, not mentioned	This allows us to note if we found info about SU in a place other than where it “should” be
W13 Pap Smear	Yes, No, not needed, NoPPV, NoPPnote	Source: PP V – the “not needed” is to be used when the provider has mentioned the Pap Smear and why it isn’t being done
W14- Other Health Conditions	Open	Provides an opportunity to note other important comments about the mother’s health
Services Received		
Family Planning S1 – Contraceptive offered at hospital	Select from yes, not, BTL, pt to decide later Yes, No, NoPPV, NoPPnote	This only means the service was offered – no proof or guarantee that it was accepted
S2. Provider Asks about-patient’s Return to Sexual Activity	Yes, No, NA, NoPPV, NoPPnote, DK	Contraceptive may be different from that selected at discharge – this is ok.
S2a. Contraceptive Counseling provided	Select from yes, no, visit scheduled, vasectomy, NPPV, No PP note, DK	
S2b. Contraceptive Method Provided		
S3. Patient Advised to Take a Daily Multivitamin	Yes, No, NoPPV, NoPPnote	
S4. Edinburgh Depression Screen Score	Score #	Score ranges from 1 to 30 If score is higher than 10 she should be referred

S4a – ED Follow Up	Yes, No, NoPPV, NoPPnote, provider didn't use Edinburgh	0 should be listed if the Edinburgh wasn't done
S4b – Provider addressed depression	Yes, No, NA, NoPPV, NoPPnote	100 should be listed if done but the provider didn't note exact score (ie Edinburgh was high so I referred patient) This item gives “credit” to providers who assessed or mentioned depression but didn't use the Edinburgh tool
S5 – Breastfeeding	Yes, No, NA, NoPPV, NoPPnote. Not mentioned in note	The “assess” is used generally here – did the provider ask about bonding?
S6 - Bonding	Yes, No, NA, NoPPV, NoPPnote. Not mentioned in note	Did the provider note if she was breastfeeding (at a minimum)
S7. Mother's Questions	open	If particular questions from mothers unrelated to the items covered above was noted
S8. Well-woman Exam	Yes in less than a year, Yes in a year, Yes in two years or more, No, No PPV, NoPPnote, Not mentioned in note	Provider noted when the woman should have her next well-woman exam.
S9 Breast Exam	Yes, No, NA, No PPV, No PP Note	This includes instructions for self exam as well as exam – anything related to breast examination – including lactation related concerns (ie re: clogged ducts)
S10 HNP in WeCIS	Yes or No	Note if a history (HNP) with details about-patient was completed just prior to birth or in the PP visit. The HNP may provide important health history information. It should be in every chart however it often is not.
C1 Misc Comments	An opportunity for abstractor to make additional notes	
C2 More Misc Comments	An opportunity for abstractor to make additional notes	

Appendix B

Key Informant Questions

Lactation Program Director

- 1) In your opinion, what is the best thing the UNC system does to support the initiation of breastfeeding?
- 2) In your opinion, what is the best thing the UNC system does to support the continuation of breastfeeding beyond discharge from the hospital?
- 3) Where are some potential gaps in the system as far as helping mothers continue to breastfeed once they have left the hospital?
- 4) What percent of mothers are still breastfeeding their babies at 6-weeks? At 3 months? Beyond?
- 5) What education / support do mothers receive about breastfeeding at the following points in time: Prenatally? Discharge from Hospital? Early Postpartum Period (1 week / 2 weeks)? At the Postpartum Visit? Beyond?
- 6) What are the key educational messages given to mothers to support breastfeeding?
- 7) How often are breastfeeding benefits to maternal health highlighted?
- 8) How often do you receive referrals from health care providers that result from the postpartum visit at 6-weeks?
- 9) What are some changes you would make, if any, to enhance support for breastfeeding beyond 6-weeks at UNC?
- 10) Do your strategies vary if infants are born with health problems and/or premature?
- 11) Overall, in your opinion, what is the role of the UNC health care system in promoting the health of mothers in between and beyond pregnancy?

Genetics Counselor:

- 1) Of the mothers you counsel prenatally about genetic disorders or exposures to teratogens, approximately what percent do you see again after they have had their baby?
- 2) How important do you think it is for you to meet with these families again? Why or why not?
- 3) Are there certain groups who should be triaged for additional consultations?
- 4) Is the 6-week visit the best timing for this visit? If not, what time is ideal?
- 5) Is the genetics division able to bill for these visits in the postpartum period?
- 6) If you did see a mother for a postpartum genetics consult, where would you file the visit note? WebCIS or elsewhere?
- 7) In your opinion, is the current postpartum care system at UNC effective at facilitating postpartum / interconception genetic counseling? If yes, why? If no, what could be done to improve its efficacy?
- 8) In your opinion, what role do genetic counselors play in helping women and their partners think through a reproductive life plan?

Women's Health Information Center:

- 1) What information is given to parents during prenatal classes about the postpartum visit?
- 2) What classes do you offer for women/families after they have given birth?
- 3) Have you been approached by providers or consumers with a demand for additional

- 4) classes in the postpartum period? If yes, what kinds of classes?
- 4) Are you aware of any curriculum being used (at UNC or elsewhere) for new mothers / parents / family planning / well-woman care for women of reproductive age? Are you aware of any postpartum educational materials?
- 5) How interested would you be in developing / providing additional classes or materials?
- 6) What resources would be required to do so?
- 7) In your opinion, what role does the WHIC play in promoting / supporting preconception and interconception health?

Telephone Call Center

- 1) In your opinion, about what percent of the calls you receive are from women in the first two weeks after they have been discharged from the hospital? Approximately what percent of the calls come from mothers 6-weeks postpartum or beyond?
- 2) What are the most frequently asked questions from these women?
- 3) Do you ever have requests for services that can't be provided to women at UNC?
- 4) Do you ever make calls to new mothers on behalf of providers in the clinic?
- 5) How comfortable are you to responding to questions regarding family planning? Vitamin usage? Anemia? Depression?
- 6) How well do you think the current system serves new mothers and infants? Do you have any ideas as to how it could be improved, if at all?

Diabetes Educator / Nutritionist

- 1) How much and what type of contact do you have with women with diabetes (gestational or chronic) after they have given birth?
- 2) Do you provide additional classes to mothers in the postpartum period?
- 3) How well do you think UNC does in helping women transition from prenatal care into the next phase of their life?
- 4) What is done very well? What might be some improvements that could be made?
- 5) How well do you think providers do in talking with women about vitamin supplementation once they have completed their prenatal vitamins? In particular, how well do providers do in encouraging life time use of folic acid? What about vitamins with iron or iron supplements for women at risk for anemia?
- 6) In your opinion, are there improvements that could be made in regard to counseling around supplementation? If yes, what could be done?
- 7) How often are mothers referred to you postpartum for nutrition counseling?
- 8) For those referred, how many times are you able to see them?
- 9) How likely is it that these mothers will be able to modify their diet long term based only on the services they receive from UNC at present?
- 10) What kind of links do you have with community agencies and resources in regard to weight, diet, exercise and nutrition?
- 11) In our chart reviews we noticed that there are a significant number of women seen in the prenatal clinics / postpartum who are overweight/obese. However, very few providers ever bring up the topic of weight / postpartum weight loss with these patients. Why do you think this is? What could be done, if anything, to improve the services provided to women postpartum regarding weight loss and healthy eating?
- 12) What are the top two the biggest barriers for women in the UNC health care system to accessing weight loss / nutrition services?

- 13) In your opinion, what role do you play / would you like to play in promoting and supporting women's health in between pregnancies and beyond?

Prenatal Clinic Nurse Director

- 1) What policies are in place regarding bringing infants to the 6-week postpartum visit? Is this encouraged or discouraged?
- 2) Please tell me more about the Postpartum Depression Screening Policy in your clinic. In your opinion has it been effective in improving provider screening for depression? If no, why not? If yes, why?
- 3) Does the clinic have a protocol in place regarding follow up screening for mothers with GDM? If so, please describe.
- 4) How easy is it for providers to check the blood sugar of mothers at their postpartum visit?
- 5) Does the clinic have a protocol in place regarding follow up screening for mothers at risk for anemia? If so, please describe.
- 6) How easy is it for them to check for anemia?
- 7) How often do providers calculate the BMI for their patients postpartum? In your opinion is this important for them to do? How often do the nurses talk with the patients postpartum about weight related health concerns?
- 8) Do providers follow a particular template for charting / transcription for postpartum visits? If yes, please describe. If not, how difficult would it be to put such a template in place?
- 9) In your opinion, how well do the transcribed postpartum notes reflect the true services delivered during the visit?
- 10) Do providers have "regular" patients? If yes, what percent? Does this vary by resident and faculty clinics?
- 11) What percent of patients seen in the clinics are there for visits other than prenatal or the six week postpartum?
- 12) Do women have the opportunity to sign up for the Medicaid Family Planning Waiver at their postpartum visit? Do they have the opportunity to enroll in WIC? Are there other services available to women at this visit?
- 13) What information does the clinic give to women near the end of their pregnancy about the postpartum visit and other postpartum services at UNC?
- 14) What percent of your prenatal patients receive a postpartum visit? Do you keep a record of this percent? Would you consider it a quality standard?
- 15) Do all patients have the same length of time scheduled for their visit? If not, what criteria are used to lengthen / shorten the time allocated?
- 16) Do you provide any particular educational material to mothers at the postpartum visit?
- 17) Are there practice standards in place at UNC in regard to the content of the postpartum visit?
- 18) In one state, a group of clinics came together to develop a quality improvement initiative around postpartum care. They instituted a one week call to new mothers, followed by a two week call to low risk mothers and a visit with high risk mothers, and finally had a 6-week visit for all new mothers. What do you think about that initiative?
- 19) In your opinion, what is the role do the health care providers and clinic play in the promotion of preconception / interconception health? What are some of the services provided that fulfill this role? Are there other services you'd like to add?

Appointment Coordinator

- 1) How and when are postpartum appointments made?
- 2) Are reminders sent? If so, how?
- 3) How often do women reschedule the postpartum visit? Is it difficult to do so?
- 4) Are there efforts made to have patients return to see certain providers or is it a random selection?
- 5) Are postpartum patients scheduled during certain days / times of the week or are they integrated throughout the schedule?
- 6) How do appointment issues such as cancellations, no shows or late arrival vary between prenatal patients and postpartum patients? If there is variation, why do you think this is?
- 7) Do all patients have the same length of time scheduled for their visit? If not, what criteria are used to lengthen / shorten the time allocated?
- 8) Are there any modifications you would make to the postpartum visit system?

Prenatal Clinic Manager(s)

- 1) How are patients assigned to resident or faculty clinics? Has this varied since 2006?
- 2) Who is responsible for completing the Health and Physical Report in WebCIS? How often is this done and when?
- 3) What information do providers have in hand prior to seeing a woman for her postpartum visit? How often do providers read the information they have prior to the postpartum visit?
- 4) About how many women have met their provider at least once prior to the postpartum visit?
- 5) Does the clinic track postpartum visit compliance / access? Why or why not?
- 6) Is charting for the postpartum visit done differently at the Chapel Hill North Clinic? Are their transcriptions all uploaded onto WebCIS as well?
- 7) Is there a mechanism in the system to allow for certain-patient needs to be flagged for special follow up postpartum?
- 8) Is there any additional outreach being done to mothers in the NICU to insure they receive a postpartum visit?
- 9) In your opinion, does providing women with contraception at delivery increase or decrease the likelihood that they will return to clinic for postpartum care?
- 10) How useful do you think it would be to ask each new mother to complete a simple postpartum needs assessment prior her visit?
- 11) In your opinion, how well does the current system do in avoiding smoking recidivism in the postpartum timeframe? What is working well? What modifications could be made if any to improve services?
- 12) What percent of the women who receive obstetric services from the clinic also receive well-woman care and family planning services? What percent of women use the clinic for their primary care needs as well?
- 13) Are there any special accommodations made in the clinic to encourage / support new mothers in receiving the postpartum visit? What could be done to increase the likelihood that more women would return for their postpartum visit?
- 14) What modifications, if any, would you make to the current system to enhance the postpartum visit for new mothers?
- 15) What do you think about the idea of having a series of group postpartum care visits /

classes?

- 16) In one state, a group of clinics came together to develop a quality improvement initiative around postpartum care. They instituted a one week call to new mothers, followed by a two week call to low risk mothers and a visit with high risk mothers, and finally had a 6-week visit for all new mothers. What do you think about that initiative?
- 17) Overall, what is the general perception among clinic nurses and staff about the importance of the six week postpartum visit?

Director of Nursing for Women's and Children's Hospitals and OB/GYN Department

Clinical Leadership

- 1) Overall, what percent of patients who initiate prenatal care at UNC, receive the rest of their health care also through the UNC system?
- 2) In your opinion, how well does UNC do in providing continuity of care for patients? Is there a business case to keeping more of these women / families engaged in our system? How does this vary by insurance status?
- 3) Once women lose Medicaid, what recourse do they have at UNC for follow up for conditions and health needs that might be pregnancy related? What about for chronic conditions / family planning?
- 4) How interested are you in monitoring quality indicators for postpartum care such as reporting the percent of women who receive postpartum visits, screening for postpartum anemia / GDM follow up, interconception length and so forth?
- 5) How would you feel about implementing a postpartum needs assessment / screening instrument at UNC?
- 6) What resources would be required to implement new postpartum services such as smoking cessation / recidivism prevention and family planning care coordinators? How do you feel about trying a new model of group focused postpartum care?
- 7) In one state, a group of clinics came together to develop a quality improvement initiative around postpartum care. They instituted a one week call to new mothers, followed by a two week call to low risk mothers and a visit with high risk mothers, and finally had a 6-week visit for all new mothers. What do you think about that initiative?
- 8) Overall, what role do you think UNC should play in improving the interconception health of the mothers who receive care within the facilities?

Center Care Coordinators

- 1) How are postpartum visits scheduled for your patients?
- 2) In your opinion, about what percent of mothers receive the visit? For mothers who do not receive the visit, what are some barriers that you have observed in receiving this care?
- 3) What information do mothers receive prenatally about the postpartum visit?
- 4) Do you think that mothers who have experienced a fetal demise or given birth to a very ill infant have different needs during a postpartum visit?
- 5) Do you have any recommendations as to ways to improve postpartum care for these mothers?

Department of Psychiatry – Postpartum Mood Disorder Clinic

- 1) How long has postpartum depression screening been a required component of the

- postpartum visit?
- 2) How is the system doing in detecting, referring and treating mothers with symptoms of postpartum depression?
 - 3) Is the 6-week postpartum visit the best time to detect postpartum depression? Are there additional points in time during the postpartum period (up to a year after delivery) that would be instrumental in detecting depression among new mothers?
 - 4) What challenges are faced by the women in obtaining the services they need?
 - 5) What facilitators / challenges does UNC have in providing mental health services to women?
 - 6) On average, how many times do you see a mother for postpartum depression?
 - 7) In your opinion are there any additional improvements that could be made to the current system to further improve mental health services for mothers at UNC?
 - 8) What role do you think mental health services in the postpartum period play in interconception health / women's wellness?

Perinatal Outreach Educator & Trainer / Liaison to local health departments

- 1) How difficult was it to implement standards and expectations regarding postpartum depression screening in the postpartum clinics? What factors influenced the successful implementation of this screening process?
- 2) How difficult would it be to add additional standards and expectations to the standard postpartum visit?
- 3) What are residents at UNC taught about the postpartum visit and interconception health care?
- 4) Are there linkages with local health departments and safety net providers in place to help new mothers who are Uninsured (Medicaid has expired) and have health conditions in the postpartum period?
- 5) Do women who receive postpartum visits at UNC have access to other services such as WIC during that visit?
- 6) What percent of women who receive their prenatal care at UNC have medical homes?
- 7) How well is the postpartum visit marketed to women during the prenatal period? What educational materials are given to new mothers at that visit if any?
- 8) What percent of mothers with Medicaid at UNC have Maternity Care Coordinators?
- 9) Compared to local health departments, how well does UNC do at providing comprehensive postpartum care? How well do they address additional barriers to care such as transportation and child care?
- 10) In one state, a group of clinics came together to develop a quality improvement initiative around postpartum care. They instituted a one week call to new mothers, followed by a two week call to low risk mothers and a visit with high risk mothers, and finally had a 6-week visit for all new mothers. What do you think about that initiative?
- 11) If you could make modifications to the UNC system to improve postpartum and interconception care, what would they be if any?
- 12) If you were to select three key quality indicators for the postpartum visit what would they be?

NC Women's Hospital Postpartum Discharge Coordinator

- 1) What education topics covered prior to discharge?
- 2) Is information about the postpartum visit given to patients? If so, what are women

- told about the postpartum visit?
- 3) In your opinion, how effective do you think information about the woman's health and labor/delivery are relayed to providers for the postpartum visit?
 - 4) Do you have any thoughts as to the best way to flag patients who need follow up care postpartum for providers?
 - 5) About what percent of women accept a contraceptive method prior to discharge?
 - 6) Are there a certain group of mothers who you think would benefit from more frequent contact and follow up during the first three months postpartum? If yes, please describe that group and the kind of care you wish they could receive.

OB/GYN Administration / Billing Team

- 1) How is revenue generated from the postpartum visit? What is the financial incentive for this visit? When can the clinic bill insurers for global fees?
- 2) Does the clinic make money or lose money with additional services during the first 60 days particularly for mothers with Medicaid?
- 3) Is there the potential for revenue generation by offering new and expanded services in the postpartum period? Does this vary by payer source?
- 4) What do they think about adding some kind of weekly class or scheduling blocks of time for postpartum women?
- 5) Is there a business case for offering a specific family planning clinic / enrollment for the Medicaid Family Planning Waiver as one way to keep these women in the system over time?
- 6) How does UNC create access for low income high risk women to interconception specialty care?
- 7) A chart review suggests that a number of women seen at UNC have repeat pregnancies within a year after delivery. There are also a number of women who have emergency room visits and other visits at UNC within the first year. What are your thoughts about providing expanded care to new mothers during the first year postpartum through the OB clinic?
- 8) In one state, a group of clinics came together to develop a quality improvement initiative around postpartum care. They instituted a one week call to new mothers, followed by a two week call to low risk mothers and a visit with high risk mothers, and finally had a 6-week visit for all new mothers. What do you think about that initiative?

APPENDIX C

Health Care Provider Survey

Provider Characteristics

1) What is your professional medical background? (check one)

- ☐ Maternal Fetal Medicine
- ☐ Maternal Fetal Medicine Fellow
- ☐ Obstetrician with Women's Primary Care
- ☐ Certified Nurse Midwife
- ☐ Nurse practitioners
- ☐ Resident
- ☐ Other _____

2) How many years have you been in practice? (check one)

I haven't completed my training yet

1-3

4-5

5-10

11-15

16+

The Six Week Postpartum Visit

1) A growing body of research has demonstrated that women have many health needs in the weeks and months postpartum that may go unaddressed. How do you feel about that statement? (check one)

- ☐ Strongly agree
- ☐ Agree
- ☐ Somewhat agree
- ☐ Disagree
- ☐ Strongly disagree

2) Nationally, only one third of women with GDM are screened postpartum per ADA standards. Other conditions such as anemia and hypertension may also be neglected. In your opinion what is the main reason providers don't offer this follow up? (check one)

- ☐ Not enough time
- ☐ Inadequate information about the patient at the time of the visit (i.e. may not know about-patient's prenatal conditions)
- ☐ Uninformed / aware of the screening criteria
- ☐ Unconvinced of the science for follow up screening
- ☐ Inadequate resources in the clinic
- ☐ Other

3) The literature suggests that many women of reproductive age consider their OB/GYN to be their primary health care provider. In your opinion, how many of your patients consider you their primary care provider? (check one)

- Most consider me to be their primary provider
- About half of my patients consider me to be their primary provider
- About a quarter of my patients consider me to be their primary provider
- None of my patients consider me to be their primary provider
- I do not know

4) How often do you refer your patient to additional resources or other providers for follow up after the postpartum visit? (check one)

- I refer more than 75% of my patients
- I refer about 50% (half) of my patients
- I refer about 25% of my patients
- I refer less than 20% of my patients

5) How confident are you that your patients follow up on these referrals? (check one)

- Very Confident
- Somewhat Confident
- Not Confident

6) If funds were to become available to provide new postpartum resources for your patients, which issues should have priority? (check two)

- Smoking cessation / recidivism prevention
- Postpartum weight loss & healthy eating
- Breastfeeding
- Family planning follow up
- Fatigue / Headache / Back pain reduction
- Adjusting to life with a new baby
- Work / Family balance
- Other _____

7) If Medicaid were to cover one additional health care visit for mothers in the first year postpartum, check the best timing for that visit in your opinion. (check one)

- 1 week
- 2 weeks
- 3 months
- 6 months
- 9 months
- 12 months
- Other, _____

8) A recent description of the postpartum visit stated *“the postpartum visit provides an important opportunity to assess the physical and psychosocial well-being of the mother, counsel her on infant care and family planning, and detect and give appropriate referrals for preexisting or developing chronic conditions such as diabetes, hypertension or obesity.” It is the gateway to well-woman care.* How well do you think UNC clinics meet this description of the postpartum visit? (check one)

- Very well
- Well
- Ok
- Not well

9) Please share with us any thoughts or ideas you might have for improving postpartum and/or interconception care at UNC.

Thank you for completing the Survey!

Appendix D

Sample Local Care Fact Sheet

Richard L. Whitted Human Services Center

300 West Tryon Street
Hillsborough, N.C. 27278
Clinic: (919) 245-2400
Fax: (919) 644-3312



Clinic Hours:
Monday 8am-5pm
Tuesday 9:30am-6:30pm
Wednesday 10am-5pm
Thursday 8am-5pm
Friday 8am-12 noon

Orange County Health Department's Services

- Family planning
- Child health
- Primary care
- Well women care
- Sick visits
- Nutrition counseling
- Maternity care
- Family home visiting
- WIC services
- Dental Services
- STI & HIV/AIDS services

Maps to Orange County Health Department



REFERENCES

1. Gaffney, K. "Postpartum Smoking Relapse and Becoming a Mother," *Journal of Nursing Scholarship* 38 (2006): 26-30.
2. Walker, L., Wilging, Sally. "Rediscovering the "M" in "MCH" Maternal Health Promotion After Childbirth," *JOGNN* 29 (2000): 229-236.
3. Albers, L., and Williams, D. "Lessons for US postpartum care," *Lancet* 359 (2002): 370-1.
4. Technical Working Group, W. H. O. "Postpartum Care of the Mother and Newborn: A Practical Guide," *Birth* 26 (1999): 255-258.
5. Hill, P., Aldag, Jean, Hekel, Barbara, Riner, Gina, Bloomfield, Pamela. "Maternal Postpartum Quality of Life Questionnaire," *Journal of Nursing Measurement* 14 (2006): 205-220.
6. Gaudet, T. *Body, Soul and Baby: A Doctor's Guide to the Complete Pregnancy Experience, from Preconception to Postpartum*: Bantam Books, 2008.
7. Lu, M. C., and Prentice, J. "The postpartum visit: risk factors for nonuse and association with breast-feeding," *Am J Obstet Gynecol* 187 (2002): 1329-36.
8. Moos, M. K. "Preconceptional wellness as a routine objective for women's health care: an integr ative strategy," *J Obstet Gynecol Neonatal Nurs* 32 (2003): 550-6.
9. Frias, A. E., Jr., Luikenaar, R. A., Sullivan, A. E., Lee, R. M., Porter, T. F., Branch, D. W., and Silver, R. M. "Poor obstetric outcome in subsequent pregnancies in women with prior fetal death," *Obstet Gynecol* 104 (2004): 521-6.
10. Gennaro, S., and Bloch, J. R. "Postpartum health in mothers of term and preterm infants," *Women Health* 41 (2005): 99-112.

11. Gennaro, S., and Krouse, A. "Patterns of postpartum health in mothers of low birth weight infants," *Health Care Women Int* 17 (1996): 35-45.
12. Haas, J. S., and McCormick, M. C. "Hospital use and health status of women during the 5 years following the birth of a premature, low-birthweight infant," *Am J Public Health* 87 (1997): 1151-5.
13. Hamilton, M. S., Brooten, D., and Youngblut, J. M. "High-risk pregnancy: postpartum rehospitalization," *J Perinatol* 22 (2002): 566-71.
14. Ruma, M. "Once is Enough: Preventing Recurrent Preterm Birth," *Current Practices, A Publication of the Center for Maternal and Infant Health* 1 (2007): 10-11.
15. American Academy of Pediatrics. *Guidelines for perinatal care*. Elk Grove Village (IL): American Academy of Pediatrics, 1997.
16. Johnson, K., Posner, S., Biermann, J., Cordero, J., Atrash, H., Parker, C., Boulter, S., and Curtis, M. "Recommendations to Improve Preconception Health and Health Care - United States: A Report of the CDC/ATSDR Preconception Care Work Group and the Select Panel on Preconception Care," in Prevention, ed.: Department of Health and Human Services and Centers for Disease Control and Prevention, 2006.
17. Lu, M., Kotelchuck, M., Culhane, J., Hobel, C., Klerman, L., and Thorp, J. "Preconception care between pregnancies: The content of internatal care," *Maternal and Child Health Journal* 10 (2006): S107-122.
18. Tiedje, L. B. "Psychosocial pathways to prematurity: changing our thinking toward a lifecourse and community approach," *J Obstet Gynecol Neonatal Nurs* 32 (2003): 650-8.
19. Cullum, A. S. "Changing provider practices to enhance preconceptional wellness," *J Obstet Gynecol Neonatal Nurs* 32 (2003): 543-9.

20. Misra, D., Grason, H. "Achieving Safe Motherhood: Applying a Life Course and Multiple Determinants Perinatal Health Framework in Public Health," *Women's Health Issues* 16 (2006): 159-175.
21. Andersen, R. "Revisiting the Behavioral Model and Access to Medical Care: Does It Matter?," *Journal of Health and Social Behavior* 36 (1995): 1-10.
22. NCDHHS. "More babies born in N.C. in 2007; infant death rate rises 5 percent," in Division of Public Health, ed.: North Carolina Department of Health and Human Services, 2008.
23. Gjerdingen, D. K., and Froberg, D. "Predictors of health in new mothers," *Soc Sci Med* 33 (1991): 1399-407.
24. Albers, L. L. "Health problems after childbirth," *J Midwifery Womens Health* 45 (2000): 55-7.
25. Ansara, D., Cohen, M. M., Gallop, R., Kung, R., and Schei, B. "Predictors of women's physical health problems after childbirth," *J Psychosom Obstet Gynaecol* 26 (2005): 115-25.
26. MacArthur, C., Lewis, M., and Knox, E. G. "Health after childbirth," *Br J Obstet Gynaecol* 98 (1991): 1193-5.
27. Gjerdingen, D. K., Froberg, D. G., Chaloner, K. M., and McGovern, P. M. "Changes in women's physical health during the first postpartum year," *Arch Fam Med* 2 (1993): 277-83.
28. Kahn, R., Wise, Paul, Finkelstein, Henry, Lowe, Janice, Homer, Charles. "The Scope of Unmet Maternal Health Needs in Pediatric Settings," *Pediatrics* 103 (1999): 576-581.
29. Maher, J., Souter, K. "'It's much easier to get help for the baby': women, postpartum health and maternal and child health care groups," *Health Sociology Review* 15 (2006): 104-111.

30. Declercq, E. R., Sakala, C., Corry, M.P., Applebaum, S. "New Mothers Speak Out: National Survey Result Highlight Women's Postpartum Experiences," *Listening to Mothers*. New York: Childbirth Connection, 2008.
31. Thompson, J. "Health problems of women following childbirth: part two" *Community Practitioner* 77 (2004): 306-7.
32. Thompson, J. "Health problems of women following childbirth: part one," *Community Practitioner* 77 (2004): 267-268.
33. McGovern, P., Dowd, Bryan, Gjerdingen, Dwenda, Dagher, Rada, Ukestad, Laurie, McCaffrey, David, Lundberg, Ulf. "Mothers' Health and Work-Related Factors at 11 Weeks Postpartum," *Annals of Family Medicine* 5 (2007): 519-527.
34. Gjerdingen, D. K., and Center, B. A. "First-time parents' prenatal to postpartum changes in health, and the relation of postpartum health to work and partner characteristics," *J Am Board Fam Pract* 16 (2003): 304-11.
35. Stainton, C., Murphy, B., Higgins, P., Neff, J., Nyberg, K., Ritchie, J. "The Needs of Postbirth Parents: An International, Multisite Study," *Journal of Perinatal Education* 8 (1999): 21-29.
36. Burgio, K., Zyczynski, Halina, Locher, Julie, Richter, Holly, Redden, David, Wright, Kate. "Urinary Incontinence in the 12-Month Postpartum Period," *Obstetrics & Gynecology* 102 (2003): 1291-1298.
37. Ma, Y., Goins, K. V., Pbert, L., and Ockene, J. K. "Predictors of smoking cessation in pregnancy and maintenance postpartum in low-income women," *Matern Child Health J* 9 (2005): 393-402.
38. McBride, C. M., Curry, S. J., Lando, H. A., Pirie, P. L., Grothaus, L. C., and Nelson, J. C. "Prevention of relapse in women who quit smoking during pregnancy," *Am J Public Health* 89 (1999): 706-11.
39. Polanska, K., Hanke, W., and Sobala, W. "Smoking relapse one year after delivery among women who quit smoking during pregnancy," *Int J Occup Med Environ Health* 18 (2005): 159-65.

40. Pletsch, P. "A Model for Postpartum Smoking Resumption Prevention for Women Who Stop Smoking While Pregnant," *Journal of Obstetric, Gynecologic, and Neonatal Nursing JOGNN* 35 (2006): 215-222.
41. Levine, M., Marcus, M., Kalarchian, M., Weissfeld, L., Qin, L. "Weight Concerns Affect Motivation to Remain Abstinent From Smoking Postpartum," *Annals of Behavioral Medicine* 32 (2006): 147-153.
42. Lederman, S. "The effect of pregnancy weight gain on later obesity," *Obstet Gynecol* 82 (1993): 148-155.
43. Lederman, S., Alfasi, G., Deckelbaum, R. "Pregnancy-Associated Obesity in Black Women in New York City," *Maternal and Child Health Journal* 6 (2002): 37-42.
44. Bodnar, L., Siega-Riz, Anna Maria, Arab, Lenore, Chantala, Kim and McDonald, Thad. "Predictors of Pregnancy and Postpartum Haemoglobin Concentrations in Low-Income Women," *Public Health Nutrition* 7 (2004): 701-711.
45. Bodnar, L., Siega-Riz, AM, Miller, W. "Who Should Be Screened for Postpartum Anemia?," *American Journal of Epidemiology* 156 (2002): 903-912.
46. Corwin, E., Arbour, Megan. "Postpartum Fatigue and Evidence-Based Interventions," *Maternal and Child Nursing* 32 (2007): 215-220.
47. Bodnar, L., Siega-Riz, Ana Maria, Miller, William, Cogswell, Mary, McDonald, Thad. "Who Should Be Screened for Postpartum Anemia? An Evaluation of Current Recommendations," *American Journal of Epidemiology* 156 (2002): 902-912.
48. Earl, R., Woteki, Catherine, ed. *Iron Deficiency Anemia: Recommended Guidelines for the Prevention, Detection, and Management Among US Children and Women of Childbearing Age*. Washington, DC: The National Academies Press, 1993.
49. O'Rourke, K., Roddy, Mary. "A Multivitamin Supplementation and Education Intervention as an Effective Means of Increasing Multivitamin Use Among Postpartum Women of Mexican Origin," *Paediatric and Perinatal Epidemiology* 21 (2007): 248-255.

50. Smits, L., Essed, GG. "Short Interpregnancy Intervals and Unfavourable Pregnancy Outcome: Role of Folate Depletion," *Lancet* 358 (2001): 2074-2077.

51. Williams, J., Abelman, Stephen, Fassett, Elizabeth, Stone, Cheryl, Petrinie, Joann, Damus, Karla, Mulinare, Joseph. "Health Care Provider Knowledge and Practices Regarding Folic Acid, United States, 2002-2003," *Maternal and Child Health Journal* 10 (2006): S67-S72.

52. Federation, I. P. P. "Postpartum Contraception," *PocketGuide for Family Planning Service Providers: IPPF*, 2007.

53. Gregory, K., Johnson, Clark, Johnson, Timothy, Entman, Stephen. "The Content of Prenatal Care Update 2005," *Women's Health Issues* (2006): 198-215.

54. Zhu, B., Rolfs, RT, Nangle, BE, Horan, JM. "Effect of the Interval Between Pregnancies on Perinatal Outcomes," *New England Journal of Medicine* 340 (1999): 589-594.

55. Zhu, B., Haines, KM, Le, T, McGrath-Miller, K, Boulton, M. "Effect of the Interval Between Pregnancies on Perinatal Outcomes Among White and Black Women," *American Journal of Obstetrics and Gynecology* 185 (2001): 1403-1410.

56. Zhu, B., Le, T. "Effect of Interpregnancy Interval on Low Birthweight: A Retrospective Cohort Study Using the Michigan Maternally Linked Birth Data," *Maternal Child Health Journal* 7 (2003): 169-178.

57. Zhu, B. "Effect of interpregnancy interval on birth outcomes: findings from three recent US studies," *International Journal of Gynecology and Obstetrics* 89 (2005): S25-S33.

58. Klerman, L. V., and Reynolds, D. W. "Interconception care: a new role for the pediatrician," *Pediatrics* 93 (1994): 327-9.

59. Klerman, L., Cliver, SP, Goldenberg, RL. "The Impact of Short Interpregnancy Intervals on Pregnancy Outcomes in a Low-Income Population," *American Journal of Public Health* 88 (1998): 1182-1185.

60. Moos, M.-K. "Preconception Health Where To From Here?," *Women's Health Issues* 16 (2006): 156-158.
61. Gross, K. "Unintended Pregnancies in North Carolina: Results from the North Carolina PRAMS Survey," *Special Report Series by the State Center for Health Statistics*. Raleigh: State Center for Health Statistics, 2002.
62. Kost, K., Singh, Sushella, Vaughan, Barbara, Trussell, James, Bankole, Akinrinola. "Estimates of contraceptive failure from the 2002 National Survey of Family Growth," *Contraception* 77 (2008): 10-21.
63. Feinberg, E., Smith, M., Morales, M., Claussen, A., Smith, D., Perou, R. "Improving Women's Health during Internatal Periods: Developing an Evidenced-Based Approach to Addressing Maternal Depression in Pediatric Settings," *Journal of Women's Health* 15 (2006): 692-703.
64. Chaudron, L., Kitzman, H., Szilagyi, P., Sidora-Arcoleo, K., Anson, E. "Changes in maternal depressive symptoms across the postpartum year at well child care visits," *Ambulatory Pediatrics* 6 (2006): 221-3.
65. Incorporated, Q. M. "SF-36 Medical Outcomes Short Form," in Incorporated, Q. M., ed. Lincoln, RI: Quality Metric Inc, 2008.
66. Da Costa, D., Dritsa, M., Rippen, N., Lowensteyn, I., Khalife, S. "Health-related quality of life in postpartum depressed women," *Archives of Women's Mental Health* 9 (2006): 95-102.
67. Sobey, W. S. "Barriers to postpartum depression prevention and treatment: a policy analysis," *J Midwifery Womens Health* 47 (2002): 331-6.
68. Sleath, B. L., Thomas, Naveen, Jackson, Elizabeth, West, Suzanne, Gaynes, Bradley. "Physician Reported Communication About Depression and Psychosocial Issues During Postpartum Visits," *North Carolina Medical Journal* 68 (2007): 151-155.

69. Bonuck, K., Trombley, Michelle, Freeman, Katherine, McKee, Diane. "Randomized, Controlled Trial of a Prenatal and Postnatal Lactation Consultant Intervention on Duration and Intensity of Breastfeeding up to 12 Months," *Pediatrics* 116 (2005): 1413-1426.
70. AHRQ. "Breastfeeding and Maternal and Infant Health Outcomes in Developed Countries," in Quality, A. f. H. R. a., ed., *Evidence Report/Technology Assessment No. 153*. Rockville: Agency for Healthcare Research and Quality, 2007.
71. D'Angelo, D., Williams, Letitia, Morrow, Brian, Cox, Shanna, Harris, Norma, Harrison, Leslie, Posner, Samuel, Hood Jessie, Zapata, Lauren. "Preconception and Interconception Health Status of Women Who Recently Gave Birth to a Live-Born infant --- Pregnancy Risk Assessment Monitoring System (PRAMS), United States, 26 Reporting Areas, 2004," *Morbidity and Mortality Weekly Review* 56 (2007): 1-35.
72. Holditch-Davis, D., Bartlett, Robin, Blickman, Andrea, Miles, Margaret. "Posttraumatic Stress Symptoms in Mothers of Premature Infants," *JOGNN* 32 (2003): 161-171.
73. Singer, L., Salvator, Ann, Guo, Shenyang, Colin, Marc, Lilien, Lawrence, Baley, Jill. "Maternal Psychological Distress and Parenting Stress After the Birth of a Very Low-Birth-Weight Infant," *Journal of the American Medical Association* 281 (1999): 799-805.
74. Ahn, S. "Effects of maternal employment and infant's prematurity on postpartum health," *Dissertation Abstracts International: Section B: The Sciences and Engineering* 62 (2001): 775.
75. Wallerstedt, C., Lilley, Margaret, Baldwin, Kathleen. "Interconceptional Counseling After Perinatal and Infant Loss," *JOGNN* 32 (2003): 533-542.
76. Lawson, E. J., and Rajaram, S. "A transformed pregnancy: the psychosocial consequences of gestational diabetes," *Sociology of Health & Illness* 16 (1994): 536-562.

77. Feig, D. S., Chen, E., and Naylor, C. D. "Self-perceived health status of women three to five years after the diagnosis of gestational diabetes: a survey of cases and matched controls," *Am J Obstet Gynecol* 178 (1998): 386-93.
78. Thomas, H. "Women's postnatal experience following a medically complicated pregnancy," *Health Care Women Int* 25 (2004): 76-87.
79. Mercer, R. "Becoming a Mother Versus Maternal Role Attainment," *Journal of Nursing Scholarship* 36 (2004): 226-232.
80. Nelson, A. M. "Transition to Motherhood," *JOGNN* 32 (2003): 465-477.
81. O'Reilly, M. "Achieving a New Balance: Women's Transition to Second -Time Parenthood," *JOGNN* 33 (2004): 455-462.
82. Nelson, A. M. "A Qualitative Study of Older First-Time Mothering in the First Year," *Journal of Pediatric Health Care* 18 (2004): 284-291.
83. Martell, L. "Heading Toward the New Normal: A Contemporary Postpartum Experience," *JOGNN* 30 (2001): 496-506.
84. Schmied, V., Everitt, L. "Post-natal care: Poor coupling or priority area?," in Barclay, L., Jones, L., ed., *Midwifery: Trends and Practice in Australia*. Melbourne: Churchill Livingstone, 1996.
85. Ashworth, T., Nobile, Amy. *I Was a Really Good Mom before I Had Kids*. San Francisco: Chronicle Books, 2007.
86. Bryant, A. S., Haas, J. S., McElrath, T. F., and McCormick, M. C. "Predictors of Compliance with the Postpartum Visit among Women Living in Healthy Start Project Areas," *Matern Child Health J* (2006).
87. Kogan, M. D., Leary, M., and Schaetzel, T. P. "Factors associated with postpartum care among Massachusetts users of the Maternal and Infant Care Program," *Fam Plann Perspect* 22 (1990): 128-30.

88. Loomis, L., and Martin, M. "The Interconception Health Promotion Initiative: A Demonstration Project to Reduce the Incidence of Repeat LBW Deliveries in an Urban Safety Net Hospital," *Family Community Health* 23 (2000): 1-16.
89. Brown, C. "Promoting Healthy Lifestyles After a High-Risk Pregnancy Outcome: The MICN Demonstration Program," *International Journal of Childbirth Education* 13 (1998): 9-13.
90. Pistella, C. Y., and Synkewecz, C. A. "Community postpartum care needs assessment and systems development for low income families," *J Health Soc Policy* 11 (1999): 53-64.
91. York, R., Tulman, L., Brown, K. "Postnatal care in low-income urban African American women: relationship to level of prenatal care sought," *J Perinatol* 20 (2000): 34-40.
92. Hulsey, T. M., Laken, M., Miller, V., and Ager, J. "The influence of attitudes about unintended pregnancy on use of prenatal and postpartum care," *J Perinatol* 20 (2000): 513-9.
93. Stevens-Simon, C., O'Connor, P., Bassford, K. "Incentives enhance postpartum compliance among adolescent prenatal patients," *Journal Of Adolescent Health* 15 (1994): 396-399.
94. Chu, S., Callaghan, WM, Shapiro-Mendoza, CK, Bish, CL. "Postpartum Care Visits - - - 11 States and New York City, 2004," *Mortality and Morbidity Weekly Review* 56 (2007): 1312-1316.
95. Corrarino, J., Moos, Merry-K. "Local Health: An Underrecognized Resource for Women at High Risk for Preterm Birth," *American Journal of Maternal and Child Nursing* 29 (2004): 366-372.
96. Long-Valentin, A. "Postpartum Visit Utilization Assessment: North Carolina Local Public Health Departments," North Carolina Division of Public Health, Women's Health Branch, 2008.

97. Professionals, A. o. R. H. "Your Six-Week Postpartum Check-up: A Health Care Guide for New Mothers," *Health Matters*. Washington DC: Association of Reproductive Health Professionals, 2006.
98. Professionals, A. o. R. H. "Postpartum Counseling A quick Reference Guide for Clinicians," Association of Reproductive Health Professionals, 2006.
99. Moos, M.-K. "Model Interconception Care Plans for Women's Health Services Continuity Conferences." Chapel Hill100. Blenning, C. E., and Paladine, H. "An approach to the postpartum office visit," *Am Fam Physician* 72 (2005): 2491-6.
101. Cheng, C., Fowles, E., Walker, L. "Postpartum Maternal Health Care in the U.S.: A Critical Review," *Journal of Perinatal Education* 15 (2006): 34-42.
102. Gynechologists, American Academy of Pediatrics and American Academy of OB/GYN. "Guidelines for Perinatal Care Fifth Edition," in American College of OB/GYN, ed. Elk Grove Village, IL: American College of Obstetricians and Gynechologists, 2002.
103. National Institute for Health and Clinical Excellence "Clinical Guideline 6: Antenatal Care, Routine care for the healthy pregnant woman," National Institute for Clinical Excellence, 2003.
104. Levitt, C., Shaw, E., Wong, S., Kaczorowski, J., Springate, R., Sellors, J., and Enkin, M. "Systematic review of the literature on postpartum care: methodology and literature search results," *Birth* 31 (2004): 196-202.
105. Levitt, C., Shaw, E., Wong, S., Kaczorowski, J., Springate, R., Sellors, J., and Enkin, M. "Systematic review of the literature on postpartum care: selected contraception methods, postpartum Papanicolaou test, and rubella immunization," *Birth* 31 (2004): 203-12.
106. Smirnakis, K. V., Chasan-Taber, L., Wolf, M., Markenson, G., Ecker, J. L., and Thadhani, R. "Postpartum diabetes screening in women with a history of gestational diabetes," *Obstet Gynecol* 106 (2005): 1297-303.

107. Baker, A., Brody, Seth, Salisbury, Kathryn, Schectman, Robin, Hartmann, Katherine. "Postpartum glucose tolerance screening in women with gestational diabetes in the state of North Carolina," University of North Carolina at Chapel Hill, 2007.
108. Samwiil, L., Mercer, C., Jarrett, P., and O'Malley, S. "Blood pressure and urinalysis are often omitted in women who have suffered pre-eclampsia at their six-week postnatal check," *Bjog* 111 (2004): 623-5.
109. Curtis, M., Abelman, Steve, Schulkin, Jay, Williams JL, Fassett, Elizabeth. "Do We Practice What We Preach? A Review of Actual Clinical Practice with Regards to Preconception Care Guidelines," *Matern Child Health J* 10 (2006): S53-S58.
110. Declercq, E. R., Sakala, C., Corry, M.P., Applebaum, S., Risher, P. "Listening to mothers: report of the first national U.S. survey of women's childbearing experiences." New York: Maternity Center Association, 2002.
111. Moos, M. K. "Preconceptional health promotion: progress in changing a prevention paradigm," *J Perinat Neonatal Nurs* 18 (2004): 2-13.
112. Kaaja, R. J., and Greer, I. A. "Manifestations of chronic disease during pregnancy," *Jama* 294 (2005): 2751-7.
113. Scholle, S., Chang, Judy, Harman, Jeffrey, McNeil, Melissa. "Characteristics of patients seen and services provided in primary care visits in obstetrics/gynecology: Data from NAMCS and NHAMCS," *American Journal of Obstetrics and Gynecology* 190 (2004): 1119-1127.
114. Visscher, H. "The Role of the Obstetrician/Gynecologist in Primary Health Care," *Clinical Obstetrics and Gynecology* 38 (1995): 206-212.
115. Kuffel, M., Stovall, Dale, Kuffel, Thomas, Zlatnik, Frank. "Reactions of Residency Directors to Primary Care Requirements in Obstetrics and Gynecology Training," *Obstetrics & Gynecology* 91 (1998): 145-148.
116. Seltzer, V. "Obstetrician-Gynecologists: Women's Health Care Physicians," *Obstetrics & Gynecology* 91 (1998): 1-5.

117. Stovall, D., Loveless, Meredith, Walden, Nikki, Karjane, Nicole, Cohen, Steve. "Primary and Preventive Healthcare in Obstetrics and Gynecology: A Study of Practice Patterns in the Mid-Atlantic Region," *Journal of Women's Health* 16 (2007): 134-138.
118. Henderson, J., Weisman, Carol. "Women's Patterns of Provider Use Across the Lifespan and Satisfaction with Primary Care Coordination and Comprehensiveness," *Medical Care* 43 (2005): 826-833.
119. Horton, J., Murphy, P, Hales, RW. "Obstetrician-Gynecologists as Primary Care Providers: A National Survey of Women," *Primary Care Update Ob/Gyns* (1994): 212-215.
120. Sullivan, N. "CNMs/CMs As Primary Care Providers: Scope of Practice Issues," *Journal of Midwifery & Women's Health* 45 (2000): 450-456.
121. Murphy, P. "Primary Care for Women: Health Assessment, Health Promotion, and Disease Prevention Services," *Journal of Nurse-Midwifery* 41 (1996): 83-91.
122. Oshio, S., Johnson, P, Fullerton, J. "The 1999-2000 Task Analysis of American Nurse-Midwifery/Midwifery Practice," *Journal of Midwifery & Women's Health* 47 (2002): 35-41.
123. NCQA. "The State of Health Care Quality 2007," National Committee for Quality Assurance, 2007.
124. US Department of Health and Human Services, *Healthy People 2010*. Washington DC: US Government Printing Office, 2000.
125. Campbell, K., ed. *Investing in Maternal and Child Health: An Employer's Toolkit*. Washington, DC: Center for Prevention and Health Services, National Business Group on Health, 2007.
126. Korst, L. M., Gregory, K. D., Lu, M. C., Reyes, C., Hobel, C. J., and Chavez, G. F. "A Framework for the Development of maternal quality of care indicators," *Maternal Child Health Journal* 9 (2005): 317-41.

127. Wise, P. "The Next Breakthrough in Improving Perinatal Health: Shifting the Focus to Women's Health," *Second National Summit on Preconception Health and Health Care*. Stanford, 2007.
128. ACOG. "Health Care for Women Health Care For All: A REFORM AGENDA ". Washington, DC: American College of Obstetricians and Gynecologists, 2008.
129. Steinberg, M., Smith, C., Braithwaite, MF., Luong, N. "Assessment of Postpartum Care Delivery at UNC Hospitals and the Center for Maternal and Infant Care," *unpublished. Final paper for MHCH 315 in the School of Public Health, University of North Carolina at Chapel Hill* (2006): 1-28.
130. Zohar, M., Shindler Rising, Sharon, Ickovics, Jeannette. "Centering Pregnancy Group Prenatal Care: promoting Relationship-Centered Care," *JOGNN* 35 (2006): 286-294.
131. French, J. "LA Best Babies." Personal Communication. February 2, 2008. Los Angeles.
132. Olson, A., Kemper, K., Kelleher, K., Hammond, C., Zuckerman, B., Dietrich, A. "Primary Care Pediatricians' Roles and Perceived Responsibilities in the Identification and Management of Maternal Depression," *Pediatrics* 110 (2002): 1169-1176.
133. Wager, K. A., Lee, F. W., Bradford, W. D., Jones, W., and Kilpatrick, A. O. "Qualitative evaluation of South Carolina's Postpartum/Infant Home Visit program," *Public Health Nurs* 21 (2004): 541-6.
134. Massey, Z., Rising, S., Ickovics, J. "CenteringPregnancy Group Prenatal Care: Promoting Relationship-Centered Care," *JOGNN* 35 (2006): 286-294.
135. Moos, M. K. "Prenatal care: limitations and opportunities," *J Obstet Gynecol Neonatal Nurs* 35 (2006): 278-85.
136. Badura, M., Johnson, Kay. "Review and Synthesis of the Interconception Care Components of 35 Healthy Start Grantees," *The 2nd National Summit on Preconception Health and Health Care*. Oakland, California, 2007.

137. Verbiest, S. "Taking Care of Moms: The UNC Postpartum Plus Prevention Program," *Current Practices, A Publication of the Center for Maternal and Infant Health* 1 (2007): 3.
138. Karp, S. "Tennessee Research Study - Preterm Birth Prevention and Interconception Care," in Verbiest, S., ed. Nashville, 2007.
139. Biermann, J., Dunlop, AL, Brady, C, Dubin, C., Brann Jr., A. "Promising Practices in Preconception Care for Women at Risk for Poor Health and Pregnancy Outcomes," *Maternal Child Health Journal* 10 (2006): S21-S28.
140. Dunlop, A. L., Dubin, Cynthia, Raynor, B. Denise, Bugg, Jr., George W., Schmotzer, Brian, Brann, Alfred W. Jr. . "Interpregnancy Primary Care and Social Support for African-American Women at Risk for Recurrent Very-low-birthweight Delivery: A Pilot Evaluation," *Maternal and Child Health Journal* (2007).
141. Johnson, K., Posner, S. F., Biermann, J., Cordero, J. F., Atrash, H. K., Parker, C. S., Boulet, S., and Curtis, M. G. "Recommendations to Improve Preconception Health and Health Care --- United States A Report of the CDC/ATSDR Preconception Care Work Group and the Select Panel on Preconception Care," *MMWR Recomm Rep* 55 (2006): 1-23.
142. Lewins, A. a. S., Christina. *Using Software in Qualitative Research, A Step-by-Step Guide*. Thousand Oaks: SAGE Publications, 2007.
143. QuickMBA. "SWOT Analysis," in MBA, Q., ed.: Internet Center for Management and Business Administration, Inc, 2008.
144. Chapman, A. "SWOT Analysis," in Chapman, A., ed., *Business Balls*. Leicester, 2008.
145. MindTools. "SWOT Analysis," in Ltd, M. T., ed., *Mind Tools*. London: Mind Tools Ltd, 2007.

146. Resource Engineering, I. "Failure Mode and Effects Analysis Resource Center," in Resource Engineering, I., ed. Waitsville, Vermont: Resource Engineering, Inc, 2008.
147. Langley, G., Nolan, K., Nolan, T., Norman, C., Provost, L. *The Improvement Guide: a Practical Approach to Enhancing Organizational Performance*. San Francisco: Jossey-Bass, 1996.
148. Swartz, M. "Family Planning Waiver Program Manager," in Verbiest, S., ed. Raleigh: NC Division of Public Health, 2008.
149. McGuire, C., Foley, R, Gorr, A, Richard, R, and Associates. *Handbook of Health Professions Education*. Washington: Jossey-Bass, 1983.