

Preconception Care: Building the Foundation for Healthy Women, Babies, and Communities

Sarah Verbiest, DrPH, MSW, MPH; Joe Holliday, MD, MPH

In 2004, the *North Carolina Medical Journal* published an issue titled: "Infant Mortality in North Carolina: A New Perspective on a Persistent Problem." In that issue authors Julie DeClerque, Janice Freedman, Sarah Verbiest, and Stuart Bondurant called for a new approach to the entrenched problem of infant mortality in North Carolina. They put forth the argument that the greatest potential impact on infant mortality rates might be realized by addressing the health of women of reproductive age.¹ Included in the issue was a detailed timeline of the interventions, policies, and projects that had been put in place over several decades, pointing to the investment and progress that had been made in infant mortality prevention. The issue concluded that North Carolina needed a new strategy if it was to reduce infant death—an approach that needed to broaden its focus from pregnancy and prenatal care to the health of women before, between, and beyond pregnancy.

Bringing us up to 2009, the current issue of the *Journal* describes an evolution of thought, practice, and programs in North Carolina that embraces the concept of wellness for women of reproductive age, both as a component of infant mortality reduction and an improvement of women's health overall. This issue brief will define and frame the concept, make the case for action, provide an update on preconception health activities in North Carolina and the nation, and offer some thoughts on where to go from here.

Definition and Framework

Evidence shows that healthy women who plan their pregnancies are more likely to have healthy babies. However we know that over half of American women do not plan their pregnancies. Women of reproductive age are not as healthy as they could be: overweight and obesity, infections, poor mental health, violence, and substance use are widely prevalent among this group. Over one-quarter of women in this age group do not have health insurance, and those who do have insurance may not have coverage for needed services such as behavioral health care.

The terms *preconception* and *interconception* health are used currently to identify the times when interventions may be most helpful in improving birth outcomes. The Centers for Disease Control and Prevention (CDC) defines preconception care as interventions that aim to identify and modify biomedical, behavioral, and social risks to a woman's health through prevention and management, emphasizing those factors which must be acted on before conception or early in pregnancy. Interconception care speaks specifically to the period of time between pregnancies, generally about 18 to 24 months postpartum.²

While these widely-used terms describe the timeframe for intervention, they are restrictive in terms of defining women's health in the context of their overall reproductive capacity. The

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Sarah Verbiest, DrPH, MSW, MPH, is the executive director of the Center for Maternal and Infant Health at the University of North Carolina at Chapel Hill. She can be reached at sarahv (at) med.unc.edu.

Joe Holliday, MD, MPH, is the head of the Women's Health Branch of the North Carolina Division of Public Health.

Dr. Holliday and **Dr. Verbiest** co-chair the Perinatal Health Committee as part of the Governor's Child Fatality Task Force.

words continue to be used both due to lack of better terminology and because they create a bridge between women's health and infant health. Focusing on preconception and interconception health broadens our current intervention for women of reproductive age, which still centers on prenatal care, labor, and delivery. It takes time to create change, particularly when pushing forward a movement that recognizes that the mother's health is at least as important as the infant's.

In spite of its somewhat narrow technical definition, the word preconception is being used by most proponents to reflect a larger goal of improving women's wellness, with the affirmation that women of childbearing age are an important population in need of attention and resources regardless of their reproductive capacity. Atrash and colleagues define the purpose of preconception care as the promotion of health throughout the lifespan for women, children, and families. Preconception care offers health services that allow women to maintain optimal health for themselves, to choose the number and spacing of their pregnancies, and, when desired, to prepare for a healthy baby.³

The fundamental elements of preconception care are broad and include screening for medical and social risk factors; providing vaccinations, counseling, and health education; and delivering effective interventions to improve health. To help us understand the evidence base for interventions, a team of clinical experts in partnership with the CDC spent two years reviewing over 700 scientific papers and 83 topics related to preconception care.^a Working with specific criteria, the group reviewed the strength of the recommendations and the quality of the evidence for these studies and came to consensus on each of the interventions. The results of their work provide a sound framework of evidence for clinicians who want to know if specific preconception interventions will improve birth outcomes. More scientific research, however, is required in this field to strengthen the evidence for interventions that look promising.⁴ In this issue Suzanne Shores and Tanya Bailey provide an overview of recommendations for care for all women of reproductive age.

Our work now is to continue to shift our paradigm from a singular focus on the pregnant woman and fetus to a wider frame that encompasses the adolescent, woman, and mother. This calls for an educational and cultural movement that gives value to a woman's health across her lifespan, not only because it impacts her children but because it also influences her quality of life, contributions to society, and state of her well-being. The guiding principles set forth in the *North Carolina Strategic Plan for Preconception Health* reiterate the importance of looking at the whole woman, not only on her reproductive capacity, and the importance of avoiding messages that might imply that certain women should or should not become mothers. The vision of the state's *Preconception Plan* is that through a collaborative focus on women's wellness, North Carolina will

improve the quality of life for women as well as the health of infants.⁵

Impact of Women's Health on Birth Outcomes

One goal in addressing women's health does indeed focus on improving birth outcomes. While the state's recent 8% drop in infant mortality is cause for celebration, the persistent racial disparities in birth outcomes and our state's continued poor national ranking (44th) remind us that we must remain even more vigilant in our efforts. Current data demonstrate that the leading cause of infant death is premature birth, which is increasing in prevalence and in the percentage of infant lives claimed. Premature birth is defined as an infant born at 37 weeks or less gestation. Further, minority women experience very preterm and very low birth weight births at markedly higher rates than white women (13.4% vs. 7.4%). This, in turn, accounts for much of the gap in birth outcomes between these two groups.⁶ In 2006, 13.6% of all infants were born preterm (17,369 babies), over 3,000 were born with serious anomalies, and 1,066 died before their first birthday.⁷ Of the babies who died, almost half (508) were from minority families. Infant death accounts for approximately 67% of all child deaths (birth to 19 years) in our state. In light of the serious consequences and costs of these birth outcomes, continued urgency and attention to prevention is required.

Much time and effort has gone into understanding the causes of infant mortality and deciphering the factors that may put a woman at risk for an infant death, early birth, and/or birth defects. In the 2004 issue of the *Journal*, the Perinatal Periods of Risk (PPOR) analysis was introduced as a different way of studying infant mortality. This analysis has been used by the World Health Organization and the CDC for over a decade. PPOR essentially helps to map fetal and infant deaths into three distinct periods of time based on when the deaths occur and the birth weight of the baby or fetus at the time of death. Infant deaths are described as pre-birth fetal deaths (24 weeks or greater gestation), neonatal deaths (first 28 days of life), and postneonatal deaths (1-12 months of life). Birth weight is divided into low birth weight (500-1,500 grams) or higher birth weight. The deaths are then attributed to one of four areas: maternal health/prematurity, maternity care, newborn care, and infant health. Using this method, the death rates for a particular population are compared to the rates of a reference group. The reference group is the population with the best birth outcomes. The "excess" deaths in each category are considered fatalities that could be averted based on interventions to influence health and care in that category.¹

In 2005, the North Carolina State Center for Health Statistics applied this analysis method to its study of infant mortality. Their results showed that the largest number of excess deaths for North Carolina were in the Maternal

a A complete review of these findings is available in the December 2008 supplement to the *American Journal of Obstetrics and Gynecology*. The articles may also be accessed at www.beforeandbeyond.org.

Health/Prematurity category. Their report suggested that more prevention interventions should be concentrated on maternal behaviors before and during pregnancy, including preconception health, unintended pregnancy, smoking, and drug abuse.⁸ These findings concur with the work a team of North Carolina leaders in maternal and child health did through participation in the Association of Maternal and Child Health Professionals/Centers for Disease Control and Prevention's Action Learning Lab on State Infant Mortality (2004-2007). This group's careful study resulted in recommendations that included a focus on increasing planned pregnancies and improving women's health.⁸ The PPOR analysis for North Carolina clearly demonstrates that improvements in the care for infants in intensive care units and maternity care have been important, but they are not the answer if we desire to significantly reduce poor birth outcomes.

Providing early access to culturally appropriate and high quality prenatal care has played a very important part in the progress we have made so far in reducing infant mortality. Many programs including maternity care coordination, the perinatal outreach program, regionalization, public health awareness campaigns, and high-risk maternity clinics have contributed to declining rates of infant death. North Carolina has more than a 20 year legacy of commitment to the next generation. Unfortunately, this legacy is under threat due to massive cuts resulting from the 2009 budget deficit. This issue brief does not call for a shift in resources from one point of care to another. Nor does it attempt to put forward that prenatal care is not important. Rather, it calls for a broadening of this care which will allow women to begin prenatal care healthy and will allow for a continuation of health messages and services once the woman has given birth. Investment in the health of women of reproductive age has the potential to double its impact—first for this generation and again for the next. Paul Wise, a prominent leader in the field of maternal and child health recently called us to action: *"At some point, we must recognize that the tragedy of poor birth outcomes in the United States is largely a legacy of the poor general health status of women in the United States... It is time for a comprehensive approach to improving newborn health, one that respects the complex epidemiology of childbearing and the pragmatic requirements of constructing a strong, collective commitment to women's health."*⁹

Impact of Poor Health on Women

North Carolina's infant health data are not encouraging, and data reflecting the health of the state's 1.8 million women of childbearing age indicate a number of troubling trends and conditions. For example, only a little over half of all young women (53%) meet daily physical activity recommendations, 28% are obese, 26% overweight, 10% have hypertension, and 3% have diabetes.⁵ Further, 38% of women over the age of 18 have high cholesterol. Half of all mothers were not breastfeeding at eight weeks.¹⁰ Many of these statistics are related to the growing trend of obesity, which poses a major threat to women's health. Robert Meyer, Harry Herrick, and

Fatma Simsek's work in *Running the Numbers* illustrates this point by reporting body mass index numbers for women of reproductive age. Also in this issue, Anna Maria Siega-Riz and Corrine Giannini provide an overview of obesity and overweight in North Carolina and offer recommendations for physicians about how to promote healthy weight in women.

There are other areas of concern for the health of women of reproductive age. Eleven percent of these women report binge drinking, 24% report tobacco use, 8% report illicit drug use, 20% experience postpartum depression, and 26% report poor mental health.⁵ The *North Carolina Women's Health Report Card* found that 6.7% of women reported physical abuse in the 12 months preceding pregnancy.¹⁰ Further, one out of every six women will be sexually assaulted in their lifetime, with college age women four times more likely to be assaulted.¹¹ The consequences of physical, sexual, and mental abuse of women are far-reaching. A woman's mental well-being is foundational to her ability to care for herself, plan her life, and create a healthy family. The upheaval in North Carolina's mental health care system has the potential to not only impact women but to affect their offspring as well. In this issue of the *Journal*, Laura Louison, Sherri Green, Sheila Bunch, and Anna Scheyett discuss mental illness and substance abuse among women of reproductive age and provide a comprehensive review of this issue in our state.

Data describing women's reproductive health are also worrisome. In 2006, the proportion of births that were unintended was 48%. Sexually transmitted infections remain a problem in North Carolina: for every 100,000 women, 1,234 have chlamydia, 451 have gonorrhea, and 240 live with HIV/AIDS.⁵ Unplanned pregnancies and sexually transmitted infections impact women's health, fertility, relationships, goals, and economic status.

Chronic disease is often linked with aging and older members of the population. However results of the 1996 National Health Interview Survey show that the prevalence of a number of chronic conditions is high among women under 45 years of age. Using data from this survey, Misra and colleagues found that of every 1,000 women, 82.9 had a deformity or orthopedic impairment, 68 had asthma, 64 migraine headaches, 51.9 chronic bronchitis, 35.8 arthritis, 35.5 heart disease, 31.9 diseases of the female genital organs, and 30 hypertension. The authors also found that approximately one in four young women with diabetes and one in five young women with asthma had been hospitalized at least once in the preceding year because of their disease.¹² A more recent study by Chatterjee and colleagues found that, within their sample of 6,294 women ages 19 to 45, 39% reported a chronic illness. Among the chronic physical conditions, asthma was the most prevalent followed by hypertension, chronic obstructive pulmonary disease (COPD), arthritis, and heart disease. Mental illness was more common than physical illness, with 12% of women reporting a mood disorder.¹³ As women postpone childbearing, there is also an increased prevalence of chronic disease that affects pregnancy-related care. In addition, pregnancy may exacerbate chronic diseases and cause increased maternal morbidity.¹²

The diversity of the health needs of women of reproductive age highlights the necessity for all health care providers, regardless of specialty, to be involved in the preconception care movement. It also suggests that the many different organizations and associations that represent disease-specific issues (such as asthma and migraines) have an obligation to look at their patients not only in the context of their disease but also as women who may choose to become mothers. Women of reproductive age are important in the workforce and in their communities. These indicators suggest that many may be experiencing risks and/or living with health behaviors that are compromising their health over their life course as well as affecting their productivity now. While women between the ages of 18 and 44 are generally considered to be a healthy segment of the population, these data suggest that this may not always be the case. At a minimum it is clear that a significant portion of this group may be laying the foundation for a long future of poor health.

Inequities in Women's Health

Research shows that minority women often experience health inequities that manifest themselves in many ways throughout their lives. African American women in the United States have a life expectancy at birth more than four years shorter than white women and a maternal mortality ratio nearly four times higher.¹⁴ Their babies are almost three times more likely to die than babies born to white women. African American and Native American women in particular bear an increased burden of chronic disease, infections, unintended pregnancy, and poverty. North Carolina will not improve ranking in infant mortality without addressing the needs of African American women across their lifespan.

In May 2005, the North Carolina State Center for Health Statistics found that racial disparities in birth outcomes increased with maternal age. Their data suggested that health indicators for African American women worsen substantially with age, and that racial disparities in women's health also increase with age. For example, the ratio of neonatal deaths for African American and white women ages 15-19 was 1.50 as compared to a ratio of 3.03 for women 35 years or older. The authors noted that this data supported the "weathering hypothesis" which suggests that the health of African American women may begin to deteriorate in early adulthood as a physical consequence of cumulative socioeconomic disadvantage.¹⁵

Scientific evidence is building to support this hypothesis, suggesting that environmental, biological, and behavioral stressors occurring over the lifespan of the mother from the moment she herself was conceived until she delivers her own child may explain some health disparities. Based on this concept, it could take several generations for effective

interventions to reduce disease.¹⁶ Preconception health and women's wellness offers a very important opportunity for programs and policies to take a longer vision and a collaborative life course approach to health inequities. The *North Carolina Preconception Plan* prioritizes programs with the potential to address health disparities. Further, the Plan calls for infusing community development and consumer leadership into each step that is taken. Without an intentional, culturally appropriate focus on African American and Native American women, it is possible that preconception education and care could further widen the disparities in birth outcomes and women's health. Focusing on this population of women provides the greatest opportunity to impact the health of North Carolina, not only for women but for the communities in which they live and work as well.

Paradigm Shift in Action

There has been tremendous activity and momentum in the arena of preconception health since the publication of the 2004 infant mortality issue of the *North Carolina Medical Journal*. In November 2004, the CDC launched the Preconception Health and Health Care Initiative, which included experts and representatives from over 35 national, state, and local organizations as well as representatives from 22 CDC programs concerned with the health of women and infants. In June of 2005, the CDC created a Select Panel on Preconception Care to develop recommendations to improve preconception health and health care. As part of this work they also held the first National Summit on Preconception Health and Health Care. Recommendations and goals were released in April 2006 (see sidebar, page 421). In June 2006 the CDC established five implementation workgroups (clinical, public health, consumer, policy and finance, and research and surveillance) to fine tune the recommendations and begin to move them forward.

The second National Summit on Preconception Health and Health Care was held in October 2007, with double the number of participants from the first summit and attendees representing all the states and a wide variety of agencies and groups. The workgroups used this summit as an opportunity to share their work with the larger community, collect new ideas and strategies, and recruit additional volunteers. In December of 2008, two national journals published supplements of issues focused entirely on preconception health. These supplements profiled the efforts of two of the work groups. The *American Journal of Obstetrics and Gynecology* issue focused on the clinical content of preconception care. The *Women's Health Issues* supplement focused on policy and finance related to preconception health and health care. Both of those issues were made available to the public free of charge.^b In August 2009, a national meeting for the work

b The articles may be accessed at www.everywomannc.org in the "Take Action" section.

groups was held in Washington, DC. This provided another opportunity for sharing, networking, and reporting on progress. While the work groups were frank about the challenges they faced in the areas of system changes, access to services, and consumer marketing and the engagement, the momentum remained strong. The establishment of preconception health and health care as a long-term initiative with significant participation was clear.

The call for change has been clear in many areas. During a keynote address during the Association for Maternal and Child Health Professionals' annual conference, leadership called for a broadening of definition, including turning the maternal "M" upside down to include the "W" for women. The March of Dimes has expanded its materials and messages to move beyond pregnancy to information about fertility, preconception health, and postpartum wellness. Groups such as the National Association of City and County Health Officials, the Federal Healthy Start Association, and the Office of Women's Health are fully engaged in preconception and interconception health initiatives. There is also a strong focus on sharing information about available resources, programs, and tools (a national catalogue is being developed) and working collectively to use scarce financial resources well. Many states are developing preconception plans, materials, websites, and initiatives.

North Carolina has been equally active in advancing the preconception agenda. In June 2006, the North Carolina Folic Acid Council and the North Carolina Chapter of the March of Dimes responded to the CDC Preconception Health and Health Care Recommendations by commissioning the University of North Carolina at Chapel Hill (UNC) Center for Maternal and Infant Health to develop an inventory of preconception health activities in North Carolina. The product, *Looking Back, Moving Forward: North Carolina's Path to Healthier Mothers and Babies*, reviews three decades of preconception health programs in North Carolina and proposes action steps for the future.^b The contents of the report clearly show that while preconception health may have been a new concept to many people in 2004, it was an approach that had been cultivated in North Carolina for many years. One of the founders of the preconception movement, Merry-K. Moos, is recognized in the *Tarheel Footprints in Health Care* article in this issue of the *Journal* for her long-standing commitment to defining, promoting, and teaching about this vision for women's and infant's health.

Following the publication of the inventory and call for action, a Preconception Leadership Team was convened and a strategic plan developed for North Carolina. In this issue of the *Journal*, Anna Bess Brown describes the process for developing the plan, its contents, and work group activities. Along with the development of the plan, numerous programs were underway to address elements of preconception health. Amy Mullenix describes the continued successes of the North Carolina Folic Acid Campaign in her commentary, including information about strategies that have worked well and the innovative next steps the campaign will take. In their commentary, Alvina Long

CDC Preconception Health and Health Care Goals

1. To improve the knowledge, attitudes, and behaviors of men and women related to preconception health.
2. To assure that all US women of childbearing age receive preconception care services—screening, health promotion, and interventions—that will enable them to enter pregnancy in optimal health.
3. To reduce risks indicated by a prior adverse pregnancy outcome through interventions in the interconception (interpregnancy) period that can prevent or minimize health problems for a mother and her future children.
4. To reduce the disparities in adverse pregnancies outcomes.

CDC Preconception Health and Health Care Recommendations

1. Each woman, man, and couple should be encouraged to have a reproductive life plan.
2. Increase public awareness of the importance of preconception health behaviors and services by using information that is relevant across various age groups, literacy levels, and cultural/ethnic groups.
3. As a part of primary care visits, provide risk assessment and educational and health promotion counseling to all women of childbearing age to reduce reproductive risks and improve pregnancy outcomes.
4. Increase the proportion of women who receive interventions as follow-up to preconception risk screening, focusing on high priority interventions (i.e., those with evidence of effectiveness and greatest potential impact).
5. Use the interconception period to provide additional intensive interventions to women who have had a previous pregnancy that ended in an adverse outcome (i.e., infant death, fetal loss, birth defects, low birth weight, or preterm birth).
6. Offer, as a component of maternity care, one prepregnancy visit for couples and persons planning a pregnancy.
7. Increase public and private health insurance coverage for women with low incomes to improve access to preventive women's health and preconception and interconception care.
8. Integrate components of preconception health into existing local public health and related programs, including an emphasis on interconception interventions for women with previous adverse outcomes.
9. Increase the evidence base and promote the use of the evidence to improve preconception health.
10. Maximize public health surveillance.

Valentin, Amy Hattem, and Shelby Weeks describe a number of innovative programs currently underway in the eastern region of North Carolina. These programs are particularly important as they focus on the area of the state with the highest rates of infant mortality, disparity, and chronic disease.

The profile of the Health and Wellness Trust Fund's *You Quit Two Quit* project, written by Vandana Shah, Candice Justice, and Barbara Moeykens, describes a program with a renewed commitment to smoking cessation not only for pregnant women but for new mothers as well. Cathy Melvin and Sally Herndon Malek examined the importance of smoking cessation in the 2004 issue and highlighted the difference cessation makes in infant survival. The *You Quit Two Quit* project builds on this foundation with new materials and messages that also model the positive impact that smoking cessation can have for the mother.

The North Carolina Healthy Start Foundation has developed a number of valuable educational tools for consumers and providers. These include nationally recognized women's health diaries in English and Spanish (*My Health Journal/Mi Diario de Salud*), a magazine about women's health for new mothers (*Taking Care of Me*), health promotion posters in English and Spanish for women (*It's Time to Take Care of You/Es Hora de Dedicarse a Su Salud*), two magazines about general women's health (*Choices: Health Matters for Women/Mujer Total*), wallet cards for tracking a woman's menstrual cycle (*Private Matters*), and brochures to educate about HIV (*Keeping It Real/VIH Una Realidad*).^c

North Carolina has produced more original materials for consumers about preconception health than any other state in the nation. All materials are developed with input and feedback from consumers; Spanish language materials are developed by Latinas for Latinas. The North Carolina Healthy Start Foundation also promotes the health information and referral services for families provided by the statewide, toll-free, bilingual North Carolina Family Resource Line. There are also a growing number of websites with good resources and tools for women and the health care professionals who serve them. The resource page in this issue describes some of these sites.

In addition to the projects highlighted in this issue, there are a number of innovative programs in place in North Carolina that are taking on components of the preconception challenge. The UNC Center for Maternal and Infant Health is involved in two such projects. In the Postpartum Plus Prevention Program, the March of Dimes and the Office of the Dean of the School of Medicine are supporting an intervention for mothers of infants in the neonatal intensive care unit (NICU) with the goal of reducing recurring adverse birth outcomes. In the second initiative, the John Rex Endowment is investing in the Mothers Matter Interconception Care Program at Wake County Human Services to improve postpartum visit utilization, visit content,

and extended care for high-risk mothers. Our state has also made efforts to listen to what women have to say about health and wellness. For example, the North Carolina Healthy Start Foundation, in partnership with the North Carolina State Infant Mortality Collaborative and the Latina Infant Mortality Awareness Project, conducted a series of focus groups with women in North Carolina to assess their knowledge, attitude, and practices around health and wellness. The first set of groups focused largely on low-income African American women while the second was conducted with Latinas. The reports for this work are available on the North Carolina Healthy Start website.

In Durham County, the Durham Connects program is providing outreach to new families, including postpartum home visits to many new mothers. A growing number of infant mortality reduction coalitions in North Carolina are learning about preconception health and taking steps to shift their focus to this new framework. For example, in October 2009 the Forsyth County Infant Mortality Reduction Coalition, with funding from the CDC, held a statewide Preconception Conference. The March of Dimes has sponsored several Preconception Conferences for health care providers in North Carolina over the past two years. They also support a series of innovative preconception health projects across the state through their community grant program. There are likely many other projects and programs underway across our state.^d

In light of the work already in place, this issue of the *Journal* provides us with the opportunity to move even further ahead in our journey of improving the health of mothers and their children. While there is much to be done, the following section of this issue brief highlights several core strategies for consideration.

Provide Continuous Health Care for the Whole Woman

While genetic predisposition, behavioral patterns, social circumstances, and environmental exposures are major influences on women's health,¹⁴ health care providers play an integral role in promoting and insuring the health of women of reproductive age. Each provider, regardless of specialty, has a responsibility to provide preconception health information and messages to female patients of reproductive age. Over the past several years, the importance of preconception care has been articulated by family medicine, obstetrics and gynecology, nurse midwifery, nursing, and public health. The American Diabetes Association, the American Academy of Neurology, and the American Heart Association/American College of Cardiologists have put forward preconception care recommendations as well. In their 2008 article, Atrash and colleagues noted that while existing research suggests that most women realize the importance of being in good health before a pregnancy, and

c Thanks to support from the General Assembly, these materials are available free of charge and may be ordered online at www.NCHealthyStart.org/orderform or by calling 919.256.3581 to request an order form.

d To share your work, email [cmih\(at\)med.unc.edu](mailto:cmih(at)med.unc.edu) and information about your project will be posted for others to see.

most physicians think preconception care is important, most providers do not routinely provide preconception care to their patients.³

In a 2008 editorial in *Current Opinion in Obstetrics and Gynecology*, Michael Lu described three gaps in women's health care. The first gap relates to access to care, noting that women of childbearing age were more likely to be uninsured than other women, and that the number of uninsured women is higher among minority groups. The second gap is continuity of care: for many women, particularly those with low-income, health care is sporadic and fragmented. Finally, he highlights a quality gap in which needed ancillary services are unavailable and providers may neglect providing appropriate screening and counseling to patients.¹⁴ Jack and Culpepper also identify barriers to the dissemination of preconception care: women who are the most in need of services are the least likely to receive them, reimbursement for risk assessment and health promotion is inadequate, and many clinical training programs do not emphasize risk assessment and health promotion skills.¹⁷ In her commentary, Merry-K. Moos acknowledges these barriers to care, but then moves forward and offers suggestions about steps clinicians can take to become better providers of and advocates for preconception care and women's wellness. She, along with many others, continues to reiterate the singular and core role of health care providers in offering comprehensive and complete care to women.

While previous (and current) efforts to address infant mortality have largely focused on obstetricians/gynecologists and nurse midwives, preconception health requires reaching out to all providers who interface with women and their young children. This brings a host of different players to the table and into the spotlight. The commentary by Daniel Frayne, Richard Hudspeth, and Janalynn Beste describes the unique role that family medicine can play in caring for women across their reproductive age span. In another commentary in this issue of the *Journal*, M. Kathryn Menard and William Goodnight describe the role of specialists in providing preconception health care and guidance to women with chronic conditions. They also offer specific clinical guidelines and related information for practitioners. While broader changes that address the health care system gaps described by Lu may take time, there remain many incremental changes that North Carolina's health care professionals can make in their practice today that will shape that change in the future and improve care for women now.

Promote Reproductive Life Planning

Reproductive life planning refers to the process of men and women setting life goals for childbearing. It includes planning the timing and spacing of pregnancies as well as identifying and modifying medical, behavioral, and social factors that negatively affecting pregnancy outcomes, and managing pre-existing conditions and behaviors before, between, and beyond pregnancies. Understanding that an individual's reproductive life plan is likely to change, providers need to talk

with their patients about their plan over time. Effective life planning can reduce unintended pregnancies.

Unintended pregnancies matter for many reasons. Mothers with unintended pregnancies are less likely to adopt healthy behaviors during pregnancy, less likely to seek prenatal care in the first trimester, have a greater risk of delivering low birth weight babies or babies who die before their first birthday, and are at greater risk of physical abuse. Their relationships with their partners are also at greater risk of ending.¹⁸ Preventing unintended pregnancies would also help prevent abortions—just under half of all unplanned pregnancies are terminated. Unintended pregnancies can also derail a woman's plans for her education, career, and financial security. The CDC's vision for preconception health includes the goal that all women and men of childbearing age will have high reproductive awareness, that all women will have a reproductive life plan, and that all pregnancies will be intended. As mentioned previously, with almost half of all pregnancies unplanned, there is much work to be done.

In North Carolina women who are younger than 20 years of age, African American, have less than a high school education, are unmarried, and/or receive Medicaid are more likely than other women to experience an unintended pregnancy.¹⁸ These women are also less likely to be taking a multivitamin everyday and are more likely to smoke prior to pregnancy.¹⁸ While the vast majority of women under the age of 20 say their pregnancy was unplanned, five out of six unplanned pregnancies were to women over the age of 20.¹⁸

Starting the conversation about reproductive life planning is not difficult—it may even be done in the form of a questionnaire that the woman completes prior to the visit. The initial question posed is simply an inquiry as to whether the woman wants to be a mother someday (or again). If her answer is yes, then questions follow about how old she wants to be when she has that child, the number of children she may desire, and how far apart she'd like her children to be. It is also important to ask about her plans to prevent pregnancies that she isn't ready for and what she will do if she ends up getting pregnant when she isn't ready. If she answers "no" or "don't know" to the first question, the conversation should focus on her plan to prevent herself from getting pregnant and what she will do if she becomes pregnant anyway.¹⁹

Amy Bryant, Cheryl Kovar, and Alicia Luchowski's commentary describes long-acting reversible contraceptive methods, such as intrauterine devices (IUDs). These are an effective and safe option for many women. The authors discuss the use of these methods in North Carolina and the impact they could have helping women fulfill their reproductive life plans. Haywood Brown's commentary on preconception counseling with infertile couple focuses on a different issue that women face in achieving their goals for having a family. His article includes information about diagnosing infertility and some of the special preconception needs of couples that are having trouble conceiving.

While women are often the focus of family planning clinics and counseling, men's education about fertility, contraceptives, and reproductive life planning should not be ignored. Men

should also be encouraged to envision the family that they may or may not want to have in the future. Men have an important decision-making and supportive role that is often overlooked. While the CDC is clear that individuals should be responsible for their own reproduction, the support of health care providers, policymakers, families, and the community is often needed in helping women actualize their plans. This includes providing information about contraceptives, access to family planning services, information, infertility prevention and treatment, and policies, services, and support for families and children.

Align Policy and Funding

Among the 30 nations that make up the Organization for Economic Cooperation and Development, the United States ranks near the bottom on most standard measures of women's health. American women rank 23rd in life expectancy, 22nd in maternal mortality, and 25th in infant mortality.¹⁴ This, in essence, reflects the lack of commitment by policymakers and the public in investing in and supporting the health of women in our country.

Women's access to health care is a glaring issue. Twenty-five percent of women of reproductive age in North Carolina are uninsured.⁵ Others may be underinsured or have co-pays and deductibles that may reduce the likelihood that they obtain the care they need. In other cases, these plans may not reimburse for ancillary services such as lactation consultation, mental health, social work, and nutrition counseling. Further, there are many areas across the state that have limited numbers of health care providers in general especially those who accept Medicaid and provide OB/GYN services.

With the health care reform debate raging at the time of the publication of this issue, it is essential that women's health and health care be considered at all levels of discussion. Associations such as the American College of Obstetricians and Gynecologists have developed reform agendas that promote critical elements of women's health care. Other groups are focusing on the importance of including preventive services, another core component of the preconception health framework. As Atrash and colleagues point out, "for preconception care to be successful, there must be a shift from the delivery of procedure-based acute care to the provision of counseling-based preventive care. In turn, for this to occur, there must be changes in the financing of medical care and in the education of trainees."³ Fortunately, North Carolina has been an innovator in its efforts to provide access to care to low-income women. In her sidebar, Patti Forest describes the role of North Carolina Medicaid in promoting women's health and wellness.

One recent example of good preconception health-related legislation is the Healthy Youth Act. While controversial for some North Carolinians, this legislation provides abstinence until marriage *and* comprehensive sexuality education programs in grades seven through nine. This act moves North Carolina one step closer to the CDC's vision that all men and women will have reproductive awareness by developing a

foundational understanding among adolescents of the family planning options available to them as they make decisions about their future. Another example of legislation that supports preconception health is the Act to Prohibit Smoking in Public and Work Places. Tobacco use is prevalent among women of reproductive age, including pregnant women. Women of reproductive age are often found working in places that expose them to secondhand smoke. This legislation both reduces exposure to secondhand smoke for women and infants and increases the likelihood that women who are trying to stop smoking will be successful.

A final example from the session, however, demonstrates an opportunity for more integrated thinking. The newly created Legislative Task Force on Childhood Obesity was developed to study issues related to childhood obesity and provide recommendations for addressing this problem by encouraging healthy eating and increased physical activity. Many of the specific items to be studied relate to the school environment. While this work is critical, the Task Force should be encouraged to consider information about children's family environment, including maternal weight, perceptions about weight, socioeconomic conditions and food supply, and the parents' capacity to affirm and support school health efforts. The committee should also review the role of breastfeeding in preventing obesity—both for the child and the mother. Viewing the child outside of the context of the mother continues to foster a policy dichotomy in serving one but not the other.

As seen above, the recent General Assembly long session will have a significant affect on women's health, both positive and negative, for many years to come. In his sidebar, Tom Vitaglione recaps the impact of the recent legislative session, highlighting the serious implications current fiscal policy has for the health of women and children.

In their commentary, Paige Hall Smith and Irene Tessaro discuss the lack of societal response to the needs of working women, especially mothers, and the resulting systematic gender-based inequities in labor force opportunities, salaries, and benefits. They point out how these inequities negatively impact the physical, psychological, social, and financial well-being of women and their families. One new approach to redressing these inequities was the creation of the White House Council on Women and Girls in March 2009. The purpose of this Council is to provide a coordinated federal response to the challenges confronted by women and girls and to ensure that all Cabinet and Cabinet-level agencies consider how their policies and programs impact women and families. According to President Obama, "The purpose of this Council is to ensure that American women and girls are treated fairly in all matters of public policy... I want to be clear that issues like equal pay, family leave, child care, and others are not just women's issues, they are family issues and economic issues."²⁰ One approach to improving women's wellness and birth outcomes may well be the development of a similar Council in the Office of the Governor in North Carolina.

Integrate and Collaborate

Paul Wise gives public health leaders, clinicians, and researchers a challenge:

*The portrayal of adverse birth outcomes as the product of a series of relatively rare, largely behavioral risk factors has created a deeply fragmented epidemiology. This, in turn, has generated a fragmented array of policies, programs, and constituencies all joined in the common goal of improving birth outcomes but all insulated from one another by artificially narrow domains of expertise and disciplinary self-interest. This is the context for assessing the utility of preconception, prenatal, and interconception care. Indeed, it presents the fundamental challenge to these public health constructs: How can they help to unify rather than further fragment the growing array of preventive and therapeutic interventions capable of improving birth outcomes?*⁹

North Carolina has many programs and agencies that deal with individual pieces of women's wellness and preconception health. These include adolescent pregnancy prevention, STI screening and treatment, family planning services, the Eat Smart, Move More campaign, healthy living and environment initiatives, domestic violence prevention services, infant mortality prevention coalitions, Healthy Carolinians, chronic disease prevention, maternal and child health services, and much more. Our state is also fortunate to have numerous research institutions, public health leaders, health care professional associations, nonprofit health organizations, insurers, and funders. Unfortunately, all of these programs have been impacted by budget constraints, dwindling resources, and increased workloads.

With limited resources and great need, this is the time to finally bridge the proverbial silos of our thinking, funding, and programming. It is time that we recognize that each of us serves a complete woman, even though our funding stream or work plan may be focused only on her insulin control, contraceptive method, or annual exam. It is critical that stronger linkages are developed between health care providers and community resources, as well as among health care specialties.

Just as women are complex and influenced by a variety of environmental and personal factors, so must our programs work together to support women in achieving health, career, and reproductive goals. The North Carolina Preconception Plan has created the foundation for this work by considering women's health needs and related wellness recommendations within the context of their family and communities as well as

utilizing a collaborative planning, implementation, and evaluation process that includes a large and diverse group of partners across North Carolina. We need to now actualize this plan by building innovative partnerships and stretching our resources in new ways.

Acknowledge the Complexity and Move Forward Anyway

If we are to improve women's health and birth outcomes, we must consider health and social systems issues, environmental impacts, and the reality of life today for young women and mothers. It is no longer possible to disregard the gap that exists between knowing and doing. Women's lives are busy, complex, and filled with multiple demands. Offering guidance and information about preconception care, healthy living, and behavior risk reduction will be more effective when delivered within a context that focuses on the whole woman. With this as the canvas, health care providers, policymakers, educators, public health leaders, and community leaders need to strategically offer supports to women to assist them in their efforts to improve their health and well-being.

While it is important to place preconception health in a larger biopsychosocial context, this can also be somewhat overwhelming and risks fostering inertia, something North Carolina's women and infants can't afford. As Boulet and colleagues comment, "Because preconception interventions can take place at any time during a woman's reproductive life and across a variety of dimensions, countless opportunities exist for positively influencing the health of women, children, and families."²¹ With a mind to the larger picture, each reader can engage in efforts to improve women's health within his or her practice, department, agency, and/or community. Assess the population you serve and then implement one initiative to broaden your outreach and messages to include women's wellness and preconception health. The commentaries in this issue of the *North Carolina Medical Journal* provide sound clinical guidance on various elements of preconception health care, offer examples of successful projects and available resources, and highlight several particularly critical issues for women of reproductive age. As is evident in the considerable progress North Carolina has made in the past five years, we are well on our way to embracing this new framework for addressing infant mortality and supporting women's wellness. **NCMJ**

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